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WEDNESDAY, February 2, is slated by The Rubber Club as a day apart. With New York as a center and the Waldorf-Astoria as a rallying place, the rubber trade will assemble to listen to committee reports, discuss trade topics, elect officers and enjoy the annual banquet. For all this, extensive preparation has been made and a most enjoyable and profitable reunion is assured. The subject that the distinguished speakers will discuss is that vital of all topics, "National Defense."

TIRES AND THE RUBBER SUPPLY.

IF prophets are not false, the quantity of rubber required in 1916 by the United States alone for its automobile tires will amount to practically half of the world's production last year.

Taking the figures of the Automobile Chamber of Commerce, that 2,400,000 cars were in use in the United

States during 1915, and increasing it by 1,200,000 for 1916, as estimated by the same authority, the indications are that in this country there will be 3,600,000 automobiles by the end of 1916, less perhaps 200,000 withdrawn from service.

Allowing five casings and five tubes for each of these 3,400,000 automobiles and figuring 42 pounds as the amount of crude rubber contained in the average car's tire equipment, 71,400 tons of rubber will be needed in 1916 for tires.

In the world outside of the United States, according to "The Horseless Age," there were 714,000 automobiles in 1915. Discarding 10 per cent. of these and allowing an increase of 25 per cent. for new cars, the indications are that about 17,243 tons of crude rubber will be required for tire equipment. This, added to the amount of rubber needed for casings and tubes in the United States, will bring the world's demand to nearly 89,000 tons for rubber to be used in tires this year.

The supply of rubber from all sources amounted to approximately 146,000 tons in 1915 against 120,380 tons in 1914, and 108,400 tons in 1913. Allowing for an increase of 22 per cent. in the rubber production during 1916, the yield will amount to 178,000 tons. These figures indicate that this year tires will consume a larger percentage than ever before of the world's largest crop of crude rubber.

Assuming that the number of tires scrapped in 1916 will amount to two-thirds of the year's equipment of casings and all of the inner tubes, there will be approximately 183,000 tons of scrapped tires—the rubber from which will be a goodly addition to the world's supply.

FIRE HAZARDS IN RUBBER FACTORIES.

WHILE the extensive conflagrations that in the olden times wiped out complete rubber plants have not occurred of late, the fire peril still exists.

The greatest fire hazard in the rubber factory is solvent naphtha, which is fairly safe when liquid but dangerous when vaporized. The explosive properties of naphtha, when mixed with air, are well known and too often disregarded. The need of ample means of ventilation to draw this explosive mixture from workrooms cannot be too strongly emphasized. Properly ventilated factories are more free from fire, more pleasant and healthful for the employees. In modern rubber factory construction much attention is given to the providing of adequate heating and ventilating systems with the object of obtaining greater efficiency from the employees than was possible

with methods in use some years ago. This incidentally greatly reduced fire hazards.

Spreader fires, one great danger in the proofing of rubber, apparently occur during periods of low atmospheric humidity, according to the examination made by F. J. Hoxie, a prominent insurance investigator, which is printed elsewhere in this issue. From his findings it would appear that there is a reasonable probability that this class of fires may be largely prevented by artificially maintaining sufficient humidity.

These fires occur chiefly during the winter months, the period of dry air, of low relative humidity. Summer, with its moisture-laden atmosphere, with high relative humidity, appears to be practically free.

It would seem that manufacturers should determine whether Mr. Hoxie's theory is correct. If it is, the number of spreader fires can be materially reduced, perhaps entirely eliminated. Adding moisture to the air in the spreader room, or in any part of the factory where low humidity may increase the fire hazard, is a simple matter.

A small jet of steam opened in the room when the relative humidity drops below 40 per cent. will accomplish the purpose, although a moistening device in connection with a blower heating system, if warmth is provided by that approved method, will be found equally efficacious and will transfer the responsibility of humidifying the air from the foreman to the engineer.

The addition of a direct reading hygrometer, an inexpensive instrument showing humidity, will form an acceptable addition to the equipment of the spreader room, or any room in which rubber cement is used. This would enable the foreman to tell at a glance whether more moisture is required in the air, not only with a view of reducing fire risk but also to improve the quality of the product, which is said to be better when made under conditions of the higher humidity.

Of course, as a rule rubber manufacture is better done in dry than in moist air. Indeed, much time and money are spent in taking all moisture from rubber compounding ingredients and fabrics and the goods are the better for it. It is a question, therefore, if damping the air of even a spreader room will be looked upon with favor. Certainly the suggestion that dry heaters be equipped with sprinklers will not appeal to the manufacturer.

Since the insurance interests have made material reduction in rates for factories possessing fire protection equipment and have added charges for those offering particular hazard, rubber manufacturers have found it to their advantage to add sprinkler systems, standpipes with hose, extinguishers and numerous pails of sand. They have taken precautions never before practiced, and perhaps previously thought unnecessary. The results have been a saving of money

in premiums and of that loss attendant to every fire that cannot be covered by insurance—delay, worry, extra work, cancelled orders.

Manufacturers will find it well worth while to reduce fire hazards to the minimum, to supply proper fire fighting equipment and to train men in each department how to act in case of emergency. Constant vigilance is the only safeguard.

THE TRIUMPH OF THE "SCULPTURED" TREAD.

FOR some years past anti-skid treads, were they "Bailey," "Nobby," "Staggard" or "Squeege," were things abhorred by the great Michelin company. "Sculptured" treads they called them and most wittily they lampooned them in prose and verse. In serious earnest, also, their experts proved that the "sculptured" tread was not the equal of the smooth tread, and their reasoning seemed sound. In spite of this, however, every tire company kept its special anti-skid, new companies added theirs until it seemed as if all possible designs had been exhausted. Then, and only then, the Michelin company, realizing perhaps what they had known all along, that tire users craved anti-skids, brought out one of their own. It isn't exactly a "sculptured" tread, but it is recessed, and it is an anti-skid. The Michelin company gracefully and effectively bowed to the inevitable.

WHERE CABLE STRIPPINGS ARE WELCOME.

OF all types of scrap rubber the condemned rubber-covered cable is the most undesirable. It is utterly, obstinately intractable. It bulks big and bends with reluctance. The owner dislikes to feed it to the alligator shears for fear that some half mile of it may pass muster as good enough for an economical borough or bankrupt republic. Among junk men stories are rife of lots gathered in this fair republic, refused by local reclaimers, shipped to England, sent back, ballasted to Venezuela, sequestered for debt, and finally brought back to rest in a Brooklyn junk yard as far from reclaiming as in the beginning.

But with rubber at \$12 a pound in Germany it is a safe bet that there, at least, no cable strippings are going begging. Too bad the embargo—but that is a forbidden topic.

MANY WONDER JUST WHY THERE SHOULD BE ANY hesitation in allowing hospital supplies of rubber to go into Germany for Red Cross use. They do not appreciate the fact that for purposes of remanufacture for tires, inner tubes or ground sheets, these goods, either new or scrapped, are equivalent to a certain amount of crude rubber. With raw rubber at its present price in Berlin rubber scrap quotations per pound should be as follows: red scrap, \$2; white scrap, \$2.20; automobile tires, \$1; inner tubes, \$5.

Fire Hazards in Rubber Mills.

IN the matter of fire hazards, every industry has its own individual peculiarities. The manufacture of rubber goods is no exception. Besides the possibilities which are common to any and every manufacturing establishment of similar build and of equal size this industry is subject to some special risks, and therefore the study of the causes of fires is an important one, and the better known they are, the more satisfactorily can they be guarded against, or more quickly extinguished when they occur.

Very thorough and exhaustive researches have been made by insurance adjusters, as well as by chemical experts, as to the principal causes of fires in rubber factories. The result of these studies seems to show that outside of those causes common to all factories, the principal dangers peculiar to rubber manufacture come from the inflammability of the solvents used in the industry, from spontaneous combustion of some of the materials, and from excessive heat in some of the operations. The two latter, however, are but minor hazards; practically the all-important one is in the use and storage of naphtha and similar solvents, and the preparations into which these enter.

A careful and comprehensive study of all the processes in the manufacture of rubber, made by Charles E. Macomber, Jr., of the N. F. P. A., has led him to the following conclusions as regards rubber footwear factories:

There is no fire hazard in crude rubber, nor in the process of washing. In drying, he recommends that if the ordinary system of steam coils is used, care should be taken that the pipes are properly installed, resting on iron, bushed where they pass through wooden partitions or floors, and protected by screens, so there will be no danger of stock coming in contact with them. Should a system be in use requiring a fan, additional precautions should be taken.

In the vacuum system of drying there would seem to be no more hazard than there would be in the installation of a steam pump or similar piece of apparatus.

In the mixing rooms there is no material hazard, as the temperatures of the material in process of compounding cannot be carried high, on account of the possibility of spoiling from this cause.

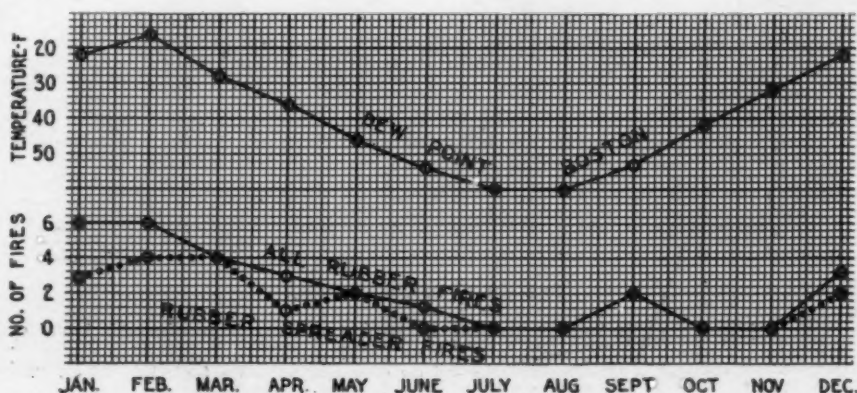
The storage of the various ingredients may constitute a hazard, however. As a rule these materials are stored in the compounding room only in sufficient amounts for immediate use, the bulk being kept in original packages, which are stored in a warehouse or portion of the factory reserved for that purpose. Among the materials which may cause trouble, this investigator mentions lampblack, which, he says, should be kept dry and stored in small quantities, preferably in metal containers with tightly fitting metal covers, for there are cases when, under cer-

tain conditions, it has been known to heat and ignite spontaneously.

While sulphur is always found, it in itself presents no special hazard, except that its presence would add fuel with the evolution of objectionable gases. There are also stored various oils, resins, waxes and the like, but with proper care these should give no trouble. In fact, this is true of all the material used in the compounding of rubber. He considers that there are no special hazards in calendering, frictioning or impregnating, as the degree of heat is low, owing to the danger of spoiling the compound.

In the making, however, comes the hazard of the use of rubber cement, and to this one preparation is laid the blame for the vast majority of fires in rubber mills. The hazard both of the manufacture and use of this article is due to the solvent used to get the rubber in solution. This is naphtha. The kind generally used and most preferred is that having a specific gravity of .706, 70 degrees Baumé, boiling at 180 degrees F. and flashing and burning at ordinary temperature.

It is recommended that the manufacture of cement should always be conducted in a detached building away from the main plant, well ventilated, and carried on without the aid of artificial light. If light be necessary, incandescent light should be used, the sockets to be keyless, the wiring run in conduit, the lamps enclosed



DISTRIBUTION OF RUBBER FACTORY FIRES REPORTED FOR SEVEN YEARS.

The upper curve is the monthly average mean of dew points at 8 A. M. and 8 P. M. at Boston, thus representing fairly well daytime conditions or "working hours" in southern New England.

The second curve is the aggregate number of rubber fires reported in twelve factories, distributed by months, in the same seven years.

The lowest curve shows the aggregate number of rubber spreader fires reported in seven factories distributed by months during the same period.

in vaporproof globes, and the switches and fuses located outside of the building. The naphtha should be stored in an underground tank located 30 feet or more distant from any building, and pumped as needed to the cement mixing room.

Power for churns (these are best of the enclosed type) should be furnished from outside by means of shaft or some kind of a drive permitting a cut-off opening. While the speed of the churns is necessarily slow (owing to the ease with which rubber is electrified by friction and pressure), as a precautionary measure it would seem advisable to "ground" all of the machinery.

The cement, except that in immediate use, should be stored in tightly covered metal cans. There are cans on the market designed for this purpose.

If the plant be sprinklered the cement house should contain a standard system of automatic sprinklers, and in all cases the cement room should be provided with a steam jet of ample size for smothering fire, having an easily accessible valve located on the outside of the building.

A day's supply only should be brought into the factory, and only enough distributed to the operators for immediate use. At the close of the day that remaining in the small pans should be returned to the container, which should be removed to the cement house.

In some factories naphtha is used for thinning the cement at

the benches. This would seem to present a needless hazard, for the cement is easily made of the proper consistency, and if used in small quantities at a time there should be very little evaporation and thus no call for the addition of naphtha.

Lighting here should be incandescent electric. The making room should have at least half of its fire pails filled with sand and supplied with a scoop for using it, as cement fires are best put out by smothering.

Some of the hazards above mentioned are also applicable to varnish. Some factories manufacture their own varnish. This should always be made in a well-detached building. The building used for the manufacture of cement could be made large and a section of this building could be used, cut off by parapet fire walls, with no openings into the cement section. The varnish is made from linseed oil, which is bought, generally, in the raw state and boiled here.

It is the opinion of this investigator that this section should be made thoroughly fireproof, and that sprinklers might be omitted. Floor should be concrete and fitted with a drain leading to a blind pit of ample capacity, located 50 feet or more from any building.

The vessels in which the oil is boiled should be sufficiently large, so that the oil can in no way boil over. Coke or hard coal, it is believed, is best for fuel. Gas is sometimes used, but might cause danger, owing to drafts.

Varnish also contains rosin or some cheap varnish gum; also sulphur in small amounts.

After the varnish is boiled for a proper length of time it is thinned down with naphtha. This hazard is similar to the cement hazard, and the naphtha should receive the same treatment here.

Varnish should be stored in strong metal tanks, and pumped out as needed. It is often brought to the factory in pails. The best way would seem to be a system by which it can be pumped to the place where it is used. The investigator has seen an installation where the pump is controlled by an electric device in the varnish room, arranged so that the pump can be started up or shut down at will. The piping is arranged to pitch back to the pump, so all varnish drains back to storage tank when pump is stopped. The amount of varnish in the factory should be limited to a day's supply.

Lighting in this department should be incandescent electric. Varnish room should be well ventilated and cut off from the main plant and vulcanizer room. Dip tanks, if used, should be installed to conform, where practicable, to the rules and requirements of the National Fire Protection Association.

Dry heaters for vulcanizing should be located in a well cut-off section. The tin lining should be standard, and attention should be given steam pipes to prevent contact with all inflammable material. They should be provided with a steam jet having an easily accessible valve, so they could be flooded with steam if necessary.

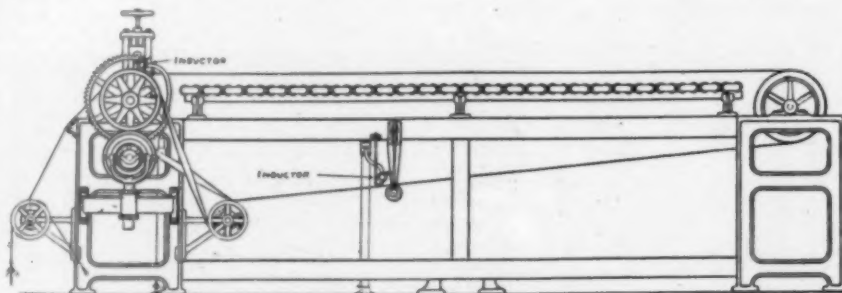
They should also be protected by a standard system of automatic sprinklers, although the manufacturers, almost without exception, take issue to this, owing to the fear of premature opening of the sprinklers, as the presence of water during the vulcanization process would ruin the goods.

The foregoing hazards, or some of them, and the precautions recommended apply practically to all rubber factories. But besides these are others applicable to the manufacture of rubber-coated fabrics. Our readers are familiar with the operation of the spreading machines, and know of the danger of ignition of the naphtha fumes from sparks of static electricity, which is generated in the fabric by friction and pressure. This, according to another investigator, has been found to be very largely a matter of humidity, which will be referred to later.

The dough or spreading mixture is simply compounded rubber which by means of naphtha and churning has been made of a dough or cement-like consistency. The hazard of manufacture of this material should be safeguarded in the same manner as described for the manufacture of cement.

Spreading machines should be located in a detached or well

cut-off section of the plant. The hazard of the operation is entirely due to the presence of the naphtha used in the spreading compound. Rubber being easily electrified by friction and pressure, and as it is thought by some engineers that the evaporation of naphtha also causes this phenomenon, the spreading machine should be equipped with devices for removing these static charges.



THE CHAPMAN NEUTRALIZER.

In the application of the Chapman neutralizer to spreading machines, the transformer is located on some convenient wall and a single heavily insulated wire leads to the several machines to be treated. Each spreading machine is fitted with two "inductors" extending across the machine over the fabric. One is placed just back of the spreading knife and the other near where the fabric is rolled up. The positions of these inductors are shown above.

These inductors are placed so that the fabric passes them at a distance of from two to four inches. The influence of the inductors extends through the air for several inches around them, and every portion of the fabric as fast as it comes within this region of influence is imperceptibly but instantly deprived of any electric charge existing upon it.

The result of this action is that the inductor at the head end of the spreader instantly and completely neutralizes every part of the fabric as fast as it leaves the spreading knife, before any charge imparted to the fabric can accumulate sufficiently to discharge to the roll, knife, frame or pipes in the form of a spark.

The object of the other inductor, treating the fabric just before it is rolled up, is to remove any slight charge redeveloped by the other rolls over which the fabric passes before winding up.

The methods in use for guarding this hazard are as follows: All metal and moving parts of the machine are well grounded. Directly in front of the knife is located a steam jet. Bearing on the underside of the fabric is a wire which collects any charge which is not broken up by the steam jet.

In some factories the speed machines are equipped with an electric device known as the Chapman Electric Neutralizer, which distributes alternating charges at high voltages in minute quantities to the places where the static charges collect. This works on the principle of the simple law of attraction and repulsion, that the static charge in any insulating material selects for itself the kind and quantity to exactly neutralize itself.

According to investigation made by the Inspection Department of the Associated Factory Mutual Fire Insurance Companies, it has been concluded that if the humidity of the room where the spreading machine is conducted is kept at about forty per cent., there will be little danger of fire from this cause.

As a proof that the chief hazard in rubber factories is due to ignition of the spreading material through sparks of static electricity F. J. Hoxie, a well-known insurance inspector and engineer, gives in graphic form the number of all fires in twelve factories during the seven years previous to 1915, and the number of spreader fires in seven factories during that same period. It will be seen that a very large percentage of all occurring in the

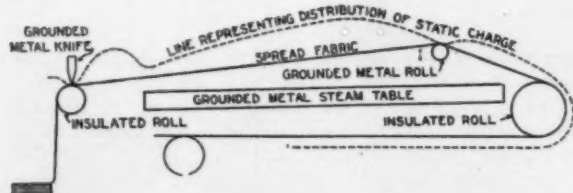
winter were spreader fires. This engineer believes that this fact suggests some peculiarity in the condition of the atmosphere, such as dryness as the probable cause, and calls attention to the humidity of the inside air in the different months. It will be observable that the line thus represented follows remarkably near parallel with that representing the total fires in those months.

Humidity measurements were made on a winter's day in the spreading room of a rubber factory in Canada, while the relative humidity of the room was gradually increasing after a cold morning in which excessive electrification was noticed. Just after static electricity had ceased to be conspicuous on the goods, and at a temperature of 58 degrees F., this engineer found a relative humidity of only 28 per cent. In summer the air from the outside entering this room would have an average relative humidity of from 60 to 80 per cent., or would contain five times as much water per cubic foot.

The observations plotted in the foregoing diagram suggest that a comparatively low atmospheric humidity is sufficient to stop most of the fires caused by static electricity, and that the natural humidity is enough to present fairly safe conditions during the greater part of the year.

The remedy suggested is a simple humidifying device or a small steam jet opened in cold, dry weather. This would be sufficient to raise the humidity in the room above the danger point; also it appears probable that in rubber factories, in addition to preventing fires, a carefully regulated humidity will improve the quality of the goods, although no conclusive data on this point are yet available.

In the rubber spreading room, above referred to, the distribution of electric charge on goods being spread was roughly determined by the use of cotton candle wicking, as an electroscope, while the relative humidity in the room was at about 20 per cent. The following sketch shows the distribution of the electrical charge. An electroscope of worsted fibres would have been somewhat better, but cotton was used, as being at hand. A gold leaf electroscope would probably be found too sensitive for indicating the comparatively large differences of charge.



DISTRIBUTION OF STATIC ELECTRICITY ON FABRIC ON A RUBBER SPREADING MACHINE ON A COLD DAY.

The cause of the electric charge on spread rubber has been attributed to friction at the knife. This may contribute to it, but its distribution would indicate that it is more probably caused by the evaporation of the solvent from the cement or from some unknown chemical action, such as oxidation or change in hydration of the rubber or fabric. For example, kerosene passed through wool filter bags can develop a sufficient charge of electricity to ignite the kerosene.

Some experiments carried out in the Factory Mutual Laboratories by Mr. Lawler and Mr. Turkington show that the act of withdrawing a piece of loose wool from a pail of benzene leaves an appreciable electric charge both on the wool and the benzene.

Electrical devices making use of very high voltage alternating current have been applied successfully for neutralizing the static charge on calendered paper. This device has been tried in a few cases on rubber spreaders with doubtful success, and sometimes fires have been directly caused by it.

Ozone from electrical devices, or from the electrified goods themselves, may also have a detrimental effect on rubber, for

ozone appears to be a natural enemy of rubber. One of the old-time practical tests for durability of a sample of rubber was to place it in a closed jar in which ozone was slowly generated by the presence of a small piece of phosphorus.

Last winter, one rubber factory installed a recording hygrometer in a room where much rubber cement is used and where fires have frequently occurred. Whenever the humidity falls below 40 per cent., moisture is blown in or the air is artificially humidified. No fires of importance have occurred in this room since these precautions were taken.

Systematic observations of the relative humidity are now being made along the lines suggested above at several rubber factories. Until more reliable data are available, it will undoubtedly be safe to assume that with a relative humidity of not less than 40 per cent., the tendency to fires from static electricity about rubber cement will be much reduced, with no damage to the goods.

Mr. Hoxie advises that a reliable hygrometer be kept in each churn room or spreading room of a rubber factory, and, when the natural humidity falls below 40 per cent., artificial humidity should be introduced. This can be done by a steam jet or by some of the various forms of humidifiers used in cotton spinning rooms and weave rooms.

THE RUBBER CLUB BANQUET.

ON account of the change in the date of the sixteenth annual banquet of The Rubber Club of America, Inc., from January 28 to February 2 to better suit the convenience of the members, the annual and other meetings were postponed to February 1 and 2, as shown in the accompanying schedule:

- FEBRUARY 1, 6:00 P. M.—Meeting of Executive Committee of The Rubber Club of America, Inc., at the Union League Club.
- FEBRUARY 1, 7:00 P. M.—Meeting of Executive Committee of the Rubber Sundries Manufacturers' Division at the Union League Club.
- FEBRUARY 1, 7:30 P. M.—Meeting of the Present Board of Directors of The Rubber Club of America, Inc., at the Union League Club.
- FEBRUARY 2, 2:00 P. M.—Annual meeting of the Rubber Sundries Manufacturers' Division at the Waldorf-Astoria.
- FEBRUARY 2, 2:00 P. M.—Annual meeting of the Mechanical Rubber Goods Manufacturers' Division in the East Room of the Waldorf-Astoria.
- FEBRUARY 2, 3:00 P. M.—Annual meeting of The Rubber Club of America, Inc., in the Myrtle Room of the Waldorf-Astoria.
- FEBRUARY 2, 4:00 P. M.—Meeting of the newly elected Board of Directors of The Rubber Club of America, Inc., at the Waldorf-Astoria.
- FEBRUARY 2, 7:00 P. M.—Annual banquet of The Rubber Club of America, Inc., in the Astor Gallery of the Waldorf-Astoria.

With a good attendance assured, the banquet promises to be a notable occasion. The following speakers, who have been announced, are men of national reputation: Edward N. Hurley, Chicago, Illinois, vice-chairman of the Federal Trade Commission; Edward D. Estabrook, New York City; Hon. Harry M. Daugherty, Columbus, Ohio, and Rev. W. Warren Giles, East Orange, New Jersey. The invocation will be given by Rev. George R. Van De Water, rector of St. Andrews Protestant Episcopal Church, New York.

Dr. E. E. Pratt, chief of Bureau of Foreign and Domestic Commerce, Washington, D. C., has accepted an invitation to be present.

For the convenience of club members and also of the press, there will be a complete stenographic report made of the speeches and addresses given at the banquet.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

The New York Automobile Show.

ALL records in attendance and number of exhibits were broken at the sixteenth annual National Automobile Show held at the Grand Central Palace, New York City, from December 31 to January 8. As generally expected, the most prominent tire manufacturers did not exhibit, but the many cars shown were equipped with standard tires and tops made of standard fabrics. Among the many exhibits of tires

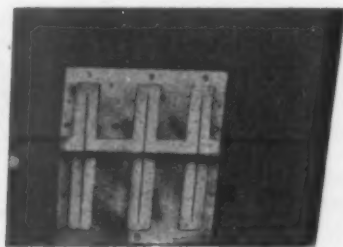
Louisville, Kentucky, attracted much attention on account of its puncture-closing qualities.

In the booth of the Essex Rubber Co., Inc., Trenton, New Jersey, there was exhibited an attractive line of blue, red and gray inner tubes, together with patches, reliners and other automobile accessories.

Shown in a prominent position on the fourth floor, a large



THE ELKINS HOSE CLAMP.



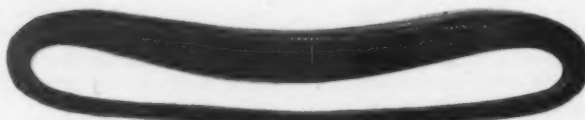
THE "PRESTO CAR-COOL."



STANWOOD SAFETY STEP PLATE.



NEW TREAD OF DAYTON TIRE.



THE BROWN SCIENTIFIC TUBE.



MICALITE EYE SHIELD.

and automobile accessories that helped to make the show interesting and instructive were the following:

TIRES AND TUBES.

The new tread of the Dayton tire, illustrated herewith, which has a heavier central rib than the former design, was shown, together with the Dayton airless tire, by the Dayton Rubber Manufacturing Co., Dayton, Ohio.

The Marathon "Whip-Cord" tires and tubes attracted attention to the booth of the Marathon Tire & Rubber Co., Cuyahoga Falls, Ohio.

Many people were interested in watching a tire-maker build up "Sterling" tires on a tire core jack at the exhibit of the Rutherford Rubber Co., Rutherford, New Jersey. Beside tires and tubes, this company displayed the "Sterling" red fiber mat for Ford cars.

Double fabric tires and "Anti-Pinch," "Double Rubber" and red "Interlock" inner tubes constituted the display of the Double Fabric Tire Co., Auburn, Indiana.

The "Victory" tire, of molded cellular construction, sealed by the base strip and the tread, was exhibited by the Milne Tire Co., Inc., New York City.

Story & Reed, New York City, demonstrated the air-retaining qualities of the "Brown Scientific" tube, which is claimed to be self-closing when punctured, and of which a cross section view is reproduced. This tube, which is made with an extra thick tread, has a strip of non-stretchable fabric vulcanized into the tread close to its inner surface. The tube is then turned inside out and the ends joined. As the larger outside circumference becomes the inner circumference, the rubber on the inside is always compressed, thus rendering puncture holes self-closing. The "Miller" pneumatic tire was shown in the same booth.

Another inner tube of thick rubber, called the "Compression," and manufactured by the Compression Inner Tube Co., Inc.,

line of tubes, patches, reliners, cushions and specialties manufactured by the Voorhees Rubber Manufacturing Co., Jersey City, New Jersey, received much attention from the visitors.

REPAIRING DEVICES.

The Adamson Manufacturing Co., East Palestine, Ohio, made an attractive exhibit of its various vulcanizers, kits and repairing devices, including the new "Model H" vulcanizer, designed to accommodate three tubes at a time and provided with a hood for carrying off fumes.

"Magic Rubber Mend," a quick vulcanizing rubber preparation for repairing tubes, boots and other rubber goods, was shown by the Eastern Rubber Co., Philadelphia, Pennsylvania, and attracted much attention, as did the "Cementless Cure" patches manufactured by Charles O. Tingley & Co., Rahway, New Jersey.

For the prevention of tire troubles, the Newmastic Co., New York City, exhibited sections of tubes that had been filled with "Newmastic," a preparation injected through the air valve, and the Woodbridge Chemical Co., New York City, demonstrated its preparation, "Air-In-Al."

Re liners, boots, patches and accessories were shown by Paul G. Niehoff & Co., Chicago, Illinois; the Polson Rubber Co., Kansas City, Missouri, and the General Tire & Rubber Co., Akron, Ohio.

Stevens & Co., New York City, exhibited the "Sampson Feather-Edge" inner tube plug for tube repairs; the Spittler Puncture Plug Co., New York City, showed its line of "Spittler" puncture plugs, and C. A. Shaler Co., Waupun, Wisconsin, presented a display of repair vulcanizing outfits.

OTHER TIRE ACCESSORIES.

An exceedingly interesting exhibit of the Schrader "Universal" tire pressure gage, valves, valve accessories and repair tools

and outfits was made by A. Schrader's Son, Inc., Brooklyn, New York.

The following is a list of other tire accessories of interest with the names of the manufacturers or agents making the exhibits:

"Off-An-On" tools for clincher tires and Stewart "Correct" tire carriers; Stewart Accessories Co., Detroit, Michigan.

"Warland" dual rims; Fryer-Auster Co., Providence, Rhode Island.

The "Twin-Rim"; Be-Be-Co., East Cambridge, Massachusetts. Friestedt rim contractor for straight side and clincher split rims; Friestedt Rim Contractor Co., Chicago, Illinois.

"Utility" tire pump, to be attached to the spark plug hole; Hill Pump Valve Co., Chicago, Illinois.

"Detroit" gearless, motor-driven tire pump; Detroit Accessories Corporation, Detroit, Michigan.

Portable and stationary air pumps for garages and tire shops; Lipman Air Appliance Co., Beloit, Wisconsin.

ACCESSORIES FOR AUTOMOBILES.

The Stanwood safety step plate, intended to prevent the tracking of mud or dirt into the car and to insure a secure foothold, as shown in the accompanying illustration, consists of a perforated steel plate covered with rubber and having 24 ribs. This was displayed by the Onguard Auto Necessities Co., Detroit, Michigan.

Another device to protect the automobilist is the Micalite eye-shield. As will be observed in its illustration, this eye-shield, which is made in two colors in one piece, is bound with split rubber tubing and is held in position on the head by rubber bands. It is manufactured by Strauss & Buegeleisen, New York City.

Charles E. Miller, New York City, with branches in the principal cities, showed a large number of automobile sundries, among which was the "U-Can-C" windshield protector, a celluloid hood, to be attached to the glass windshield by means of rubber vacuum cups, in order to prevent rain and snow striking the part of the glass thus protected.

The "Presto Car-Cool" for Ford cars, a device to prevent heat from radiating through the lever slots, was shown by the Metal Specialties Manufacturing Co., Chicago, Illinois. From the illustration, it will be observed that the lever slots are closed by rubber strips held in position by a metal frame. These strips, while permitting free use of the levers, prevent the heat from passing through the slots.

Among the electrical exhibits were the General Electric Co., Schenectady, New York, showing mercury rectifiers in operation, and the Westinghouse Electric & Manufacturing Co., Pittsburgh, Pennsylvania, displaying lighting, starting and ignition devices. The magneto and storage battery manufacturers were well represented and made attractive exhibits of their products.

An automobile cigar lighter, to be connected with the lighting system of a motor car, was shown by the Electric Automatic Cigar Lighter Co., New York City, and a self-winding electric clock was exhibited by the Hartford Clock Co., Hartford, Connecticut.

The Lowe Motor Supplies Co., New York City, displayed its line of automobile sundries.

OTHER INTERESTING EXHIBITS.

Much interest was shown in the Elkin hose clamp, here illustrated. As will be seen, the hose to be connected is slipped over the metal nipple of the clamp. The hinged arms are then folded over the hose and the ferrule is screwed down over these arms, which are thus securely impressed into the hose, forming a tight joint. This clamp is manufactured by Charles Elkin, New York City.

A large space was occupied by the General Bakelite Co., New York City, in which many samples of bakelite were shown, including the process of molding with a hydraulic press.

The "Bull Dog" and other waterproofed fabrics manufactured by the L. J. Muttly Co., Boston, Massachusetts, constituted an attractive display of samples of materials for automobile tops.

Among the novelties which attracted attention was the "B-P-C" clothes protector, an apron-like garment fastening over the front of the coat and trousers by means of springs, and made of a material which it is claimed is not affected by oil, gasoline or water.

Samples of automobile trimming, covered with jet black hard rubber, were exhibited by the Rubber & Celluloid Harness Trimming Co., Newark, New Jersey. At the same booth "Roxylite" dressing for real and artificial leather was demonstrated.

The Standard Woven Fabric Co., Framingham, Massachusetts, and the Woven Steel Hose & Rubber Co., Trenton, New Jersey, made attractive displays of brake lining and friction materials.

The Morse "Rocker-Joint" silent chains, as used on the motors of many of the higher-priced cars, were shown in position on automobile engines, by the Morse Chain Co., Ithaca, New York.

COLONEL COLT PREDICTS UNPARALLELED ACTIVITY.

Prosperity in the rubber industry and an increase in prices are predicted by Colonel Samuel P. Colt, president of the United States Rubber Co., New York City, in his review of the rubber situation printed in the "Journal of Commerce." He said in part:

My firm belief is that we may witness unparalleled activity in general business as a result of the European war, while it lasts, and for two or three years after it culminates. We are today feeling the stimulating effect of the European upheaval.

So far as the rubber industry itself is concerned, it has in general responded to this change for the better. Our mills, over 40 in number, which are located in different parts of the United States and Canada, are running fuller and employing more men and women today than ever before in the history of the company, and with every indication that our plants will be kept busy for some time to come. In fact, we are so encouraged by the present condition that we have taken steps to put in operation certain unused manufacturing facilities as well as to enlarge the capacity of other plants in operation. Although direct war orders have helped the position of the rubber manufacturers' market, it is gratifying to point out that the improvement in large part has been in our domestic demand for goods.

Touching the 1915 prediction, it is estimated that Brazil turned out 35,000 tons, the Far East 100,000 tons of plantation grades, and various other points, 15,000 tons of wild rubber. It is anticipated that the consumption of the world has increased 20 to 30 per cent. I look for this to be taken care of by the enlarged production during 1916. The present high values are an incentive to all producers to increase their output to the maximum capacity. In the East the largest planting was done in 1910, which will come into bearing in 1916. We look for that output to be 140,000 to 150,000 tons. Brazil will not increase in the same ratio, although I look for a decided increase there and in other countries where wild rubber is gathered.

Without doubt, existing conditions will necessitate an advance at an early date in all lines of rubber manufactures. The demand and consumption of crude rubber was never as great as at present. I look for general good business in all lines of rubber manufactured goods for the next two or three years to come.

THE ROLL OF HONOR OF THE MALAY STATES.

"The Roll of Honor and List of Malay States Men Serving" is the title of a 16-page supplement to the "Malay Mail" of October 25, 1915, that contains the names of 788 officers and men who are serving in the war. These names are divided into three lists, the English born containing 723, the French born 30, and the native born 35 names. The name, profession, local address, rank and regiment of each person is noted. Information is also given regarding the wounded, killed and missing. It is particularly noticeable that the majority of those listed hold commissions, some of which are of high rank. The majority of the names appearing are those of planters, although persons in all walks of life are listed.

What the Rubber Chemists Are Doing.

PRESIDENT RICHARD C. MACLAURIN, of the Massachusetts Institute of Technology, in a recent address before the New York Section of the American Chemical Society, said:

We are hurt here (in America) by the prevalence of the spirit of trade secrecy. Of course, we recognize a large part of what is thought of as "secret" is really widely known, and there is much knowledge of value that could be disclosed without any detriment whatever to the revealer.

There is still with us too much of the spirit of the pre-scientific days and too much reliance on "rule of thumb." Old-fashioned superintendents are still constantly employed who have no knowledge of science and little faith in it. Practical men must not be so scornful of what is obvious to men of science.

When the war is over the conditions of competition will be peculiarly severe, but the war should have given our chemical industries a new start and a fresh impetus, and if our range of vision is long and our enterprise does not fail, the future of chemical industry in this country should be bright indeed.

* * *

ARTIFICIAL RUBBER FROM VODKA.

Since the outbreak of the war, when the sale of vodka in Russia was prohibited, the Imperial Minister of Finance has instituted researches to adapt the national intoxicant to technical purposes which would permit the government to profitably dispose of the 260,000,000 or more gallons now in stock. In a recent issue of the Petrograd "Nowje Wremja," a chemist named Ostromyslensky is credited with having discovered a process for making artificial rubber from vodka so successfully that the government has decided to erect a large plant for manufacturing "vodka rubber."

In this connection it should be noted that United States patent 1,161,904, recently granted to David Spence and Alexander P. Clark, assignors to The B. F. Goodrich Co., covers a process for obtaining rubber-like substances from alcohols. [THE INDIA RUBBER WORLD, January, 1916, page 169.]

METHODS OF ANALYSIS.

DETERMINATION OF SULPHUR IN RUBBER.—The following method was devised by Dr. Ludwig Rosenstein:

Weigh out exactly 0.5 gm. of the finely ground sample in a 300 cc. Erlenmeyer flask. Add 15 cc. of a saturated solution of arsenic acid, 10 cc. of fuming nitric acid and 3 cc. of saturated bromine water. Cover with a watch glass and boil until the sample is completely oxidized and a clear solution is obtained, adding more fuming nitric if necessary to complete the oxidation. Evaporate to syrupy condition, then add a few crystals of potassium chlorate to insure complete oxidation and to expel oxides of nitrogen. Continue the evaporation almost to dryness to insure complete expulsion of oxides of nitrogen. Cool and take up with 50 cc. of 10 per cent hydrochloric acid, heat on steam bath until solution is complete, filter to free from any insoluble matter and dilute the filtrate to about 300 cc. From this solution the sulphur, which has been converted to sulphate, may be precipitated with barium chloride. Filter and weigh, observing the usual procedure and take special precaution that precipitate be filtered from the hot solution and washed with hot water to remove any lead salts.

The function of the arsenic acid is to raise the boiling point of the solution during the oxidation, thus making it more complete and rapid. It may be prepared by adding C. P. arsenic oxide to boiling water until boiling point of the solution is 140 degrees C.

This method has been found rapid and accurate to within less than 0.1 per cent on rubber mixings, both cured and uncured containing known amount of sulphur, with and without various compounding ingredients.

ELECTROLYTIC METHOD FOR LEAD AND ZINC IN RUBBER COMPOUNDS.—The following method, by Elmer D. Donaldson, is of interest. The portion relating to the deposition of zinc on platinum direct is adapted from a recently published method by W. S. Kimley used for determining zinc in bronze and brass.

Donaldson's method consists of digestion of the ash in nitric acid and precipitation of lead as peroxide (PbO_2), followed by evaporation and precipitation of zinc as metal, both on platinum. The electrolytic apparatus was equipped with a rotating electrode and pole-reversing switch. The larger electrodes were of platinum gauze $1\frac{1}{2}$ inches wide by 2 inches high, sand blasted, and the rotating gauze $\frac{1}{4}$ inch wide by 2 inches high. The apparatus was connected to a 110 volt direct current generator and lamp resistance.

Lead—Weigh 1 gram rubber, wrap in a 7 centimeter ashless paper and incinerate in a 20 to 30 cc. porcelain crucible. Brush the ash into a 200 cc. electrolytic beaker, add 25 cc. concentrated nitric acid, and digest on hot plate for 15 minutes. Boil to expel nitrous fumes and dilute to about 125 cc., having solution at 158 degrees to 176 degrees F. Electrolyze with rotating cathode, using direct current of two to three amperes. The lead will appear on the large gauze anode as peroxide, black when in large amounts, bronze colored when in small amounts. Electrolyze 30 minutes and wash anode thoroughly with water to remove mechanical impurities, then with alcohol and ether. Dry for 30 minutes at 338 degrees F. Weigh as peroxide of lead (PbO_2) and for convenience calculate to litharge (PbO), using the factor 0.933. No metals present in rubber mixings will interfere with this determination.

Zinc—Wash the solution and the insoluble matter from the electrolytic beaker, from which the lead has been removed, into a litre beaker. Add 5 cc. concentrated sulphuric acid, evaporate dry, and drive off most of the sulphuric acid. This is done to insure complete removal of nitric acid, which would interfere with the electro deposition of zinc. After evaporation, cool and digest residue, which usually contains considerable insoluble, with 50-75 cc. water. The zinc is now present as zinc sulphate and is readily soluble. Filter and wash. If the zinc oxide content is known to be low use entire filtrate, but if 20 per cent or over, catch filtrate in 200 cc. volumetric flask. Make up to mark and take 50 cc.

Wash this portion of solution representing 0.25 grams of rubber sample into a 200 cc. electrolytic beaker. Add considerable excess of saturated solution of sodium hydroxide over that necessary to redissolve the zinc hydroxide. Electrolyze at ordinary temperature at 2 to 2.5 amperes, rotating the anode for 20 minutes. Remove and wash with water, alcohol and ether. Dry at 212 degrees F. for a few minutes, cool and weigh.

Zinc is deposited on the cathode and is weighed as metal. The weight of zinc is calculated to zinc oxide. Aluminum will not interfere even if the solution is gelatinous from the precipitated aluminum hydroxide. In event that iron is present, filter off the iron hydroxide after adding just enough sodium hydroxide solution to insure solution of the zinc hydroxide. Then add further sodium hydroxide solution to this filtrate. Lead peroxide and zinc can be dissolved from the platinum gauze by concentrated nitric acid saturated with tartaric acid.

* * *

PREPARATION OF RUBBER SAMPLES FOR ANALYSIS.—Soft vulcanized rubber of high grade requires to be finely divided for successful analysis by extraction methods. It has recently been suggested by John H. Link to use for this purpose an "Enterprise" food masticator, No. 1 size. Repeated passage through the machine will, in a few minutes, cut an ounce of soft cured rubber sufficiently fine to pass through a 20-mesh sieve.

CHEMICAL TREATMENT OF RUBBER.

THE UNITED STATES.

VULCANIZING RUBBER-LIKE MATERIALS, 1,166,777. Paul I. Murrill, assignor to Revere Rubber Co. Rubber or rubber-like materials are cold cured by subjection to the action of sulphur monochloride and gasoline characterized by the absence of olefins.

REVULCANIZING RUBBER, 1,166,784. Raymond B. Price, assignor to Rubber Regenerating Co. The process consists of exhausting, heating, and compressing the finely divided material and compressing it under excessive compacting pressure to minimize destructive distillation, then subjecting it to vulcanizing heat, and finally quickly cooling it to check surface vulcanization.

DEVULCANIZING RUBBER, 1,167,359. Henry J. Mayers, assignor to the Empire Rubber Co. The process consists in subjecting the vulcanized rubber to the action of a bath containing de-resinated and de-turpenated oil of pine.

MANUFACTURE OF FROTH FILLINGS, 1,167,518. Fritz Pfelemer. The process comprises the steps of vulcanizing rubber material under a hot high gas pressure, then cooling it under a gas pressure at least equal to that applied during vulcanization, inserting the cooled filling into a casing, and then heating the filled casing to expand the filling until it occupies the interior of the casing. An illustrated article on the material produced by this process will be found in *THE INDIA RUBBER WORLD*, August, 1915, page 610.

MANUFACTURE OF ISOPRENE AND HOMOLOGUES, 1,168,070. Henry S. A. Holt, assignor to Badische Anilin & Soda Fabrik. The process of producing butadiene hydrocarbons by heating in the vaporized condition while in a state of dilution and in the practical absence of other organic hydrocarbons, the mixture of polymerized products other than caoutchouc-like matter resulting in the polymerization of butadiene hydrocarbons.

RECLAIMING WASTE RUBBER, 1,168,230. Gray Staunton.—Finely ground vulcanized waste rubber is mixed with about 25 per cent. of alkaline carbonate. This dry mixture is heated in an oven for two or three hours at 300 degrees F. The material is then washed to remove excess of alkali.

THE GERMAN EMPIRE.

HARD RUBBER SUBSTITUTE, 289,597 (1915). Hans Blücher and Ernest Krause. By the process yeast is converted into a horn-like substitute for hard rubber by the action of formaldehyde with or without the addition of other substances.

THE SWISS REPUBLIC.

PREPARATION OF FABRICS FOR RUBBERIZING, 68,858. W. E. Muntz, London, England. Fabrics are impregnated with alkaline salts, sodium carbonate and borax, or with basic metallic salts or basic hydroxides which unite with the sulphurous product of vulcanization and prevent injurious effect on the fabric.

PRODUCING BENZOL FROM MINERAL OIL, 69,342. Continental Caoutchouc & Gutta-Percha Co., Hanover, Germany. Mineral oil is subjected to the action of a halogen-aluminum hydrocarbon as a catalyzer. It is claimed that the process has important advantages over the cracking process, since it does not require to be operated under pressure; in fact, can be conducted in a vacuum, the benzol obtained being free from disagreeable odor.

LABORATORY APPARATUS PATENTS.

THE UNITED STATES.

ISSUED DECEMBER 14, 1915.

1,163,830. Repeated stress testing machine. J. B. Kommers, Madison, Wis.

ISSUED DECEMBER 28, 1915.

1,166,266. Attachment for fabric tensile strength testers. S. N. Senna, assignor of one-half to C. E. Torrance—both of Holyoke, Mass.

THE GERMAN EMPIRE.

PATENT ISSUED (With Date of Validity).

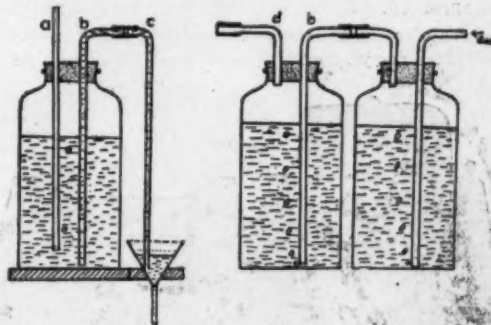
289,545 (December 31, 1913). Viscosimeter. New York-Hamburg Rubber Goods Co., Hamburg.

LABORATORY APPARATUS.

A CONSTANT LEVEL FILTER RESERVOIR.

THE constant level filter reservoir here figured possesses the advantage of being easily constructed from materials at hand in every laboratory. The principle involved is old, but its application in the present way is believed to be new.

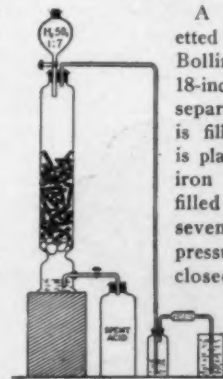
The method of constructing, due to R. R. Turner, is evident from the diagram to the left. Any size of flask or bottle



may be used. The straight tube *a* may be slipped up or down in the stopper, the position of its lower end regulating the level of the liquid in the filter. To start the flow it is only necessary to blow into the tube *a*.

A special convenience of this device lies in the possibility of making precipitations in the same vessel which is later used as a filter reservoir, thus avoiding a transfer. For precipitations by gases the apparatus, as shown at the right, may be arranged by disconnecting tube *c* and substituting *d* for *a*.

SULPHURETTED HYDROGEN GENERATOR.

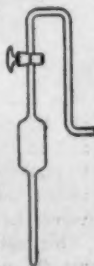


A convenient generator for sulphuretted hydrogen has been devised by R. Bolling. This apparatus is made from an 18-inch calcium chloride jar and an 8-ounce separatory funnel. The bottom of the jar is filled with flint pebbles, and over this is placed a charge of about 5 pounds of stick iron sulphide. The separatory funnel is filled with sulphuric acid, diluted one to seven, and opened so as to get the desired pressure; the stopper on top is kept tightly closed. The acid enters the tower in drops and emerges at the bottom completely spent. The generator, which is made from common laboratory apparatus, is in complete control at all times. No acid is wasted; there is no clogging of sulphide.

MODIFIED PIPETTE.

The accompanying sketch shows a very useful form of pipette suggested by Sidney Born. It is made by fusing a stopcock and a piece of bent glass tubing to a pipette. The advantages over the ordinary pipette are:

1. Safety—there is no danger of sucking up acid or dangerous liquids.
2. Ease of manipulation—the stopcock insures tighter closing and greater accuracy than use of a finger.
3. Accuracy—the line of demarcation is level with the eye when using.
4. The pipette can be carried around full without losing any liquid.



Some Molds for Seamless Rubber Goods.

THE desire of manufacturers to produce better and more satisfactory rubber goods has encouraged study of the ways for making seamless articles to replace those formerly turned out with cemented seams.

SHAPING MOLDS FOR SEAMLESS HOT WATER BOTTLES.

The manufacture of seamless blown goods such as hot water bottles offers many interesting problems. These must be intelli-



FIG. 1. HOT WATER BOTTLE FUNNEL SHAPING MOLD AND CORE.

gently considered and accurately solved before the finished product can be placed on the retailers' shelves with any degree of confidence in the stability of the goods.

It would seem that the building up of hot water bottles by hand, formerly the exclusive method of manufacture, would result in a more perfect article than can be produced by standardized mechanical means. This may be so in a few specialized instances. There are many who still stand by the time-honored hand method; but the trend is toward the mold shaped and cured bottle as a more perfect and less costly article. Just how these are made is interesting and instructive.



FIG. 2. HOT WATER BOTTLE SHAPING MOLD.

In making one class of bottles, shaping molds are used which are in reality dies that make all the would-be seams, seamless, and at the same time bite off the overflow of surplus rubber from the edges. These dies consist of two sets, one for shaping up the funnel with its threaded socket for the stopper and another which forms the body of the bottle.

Fig. 1 shows the two-part funnel mold and core. In use, a piece of regular sheeted rubber stock, cut approximately to the required size, is laid on the lower mold. A metal reinforcement for the stopper socket is then placed in the constricted end of

the mold and the core with the threaded end, covered completely with a special rubber compound, is slipped over the vertical pins that hold the core in place in the lower mold. Another piece of regular stock cut to suitable size is placed over the upper half and the two parts aligned by dowel pins are then fitted together, with the core between them, and placed under a hydraulic press.

Thus, the seamless funnel and stopper socket with its soft, hard rubber threads and hanging tab are shaped up ready to be attached to the body portion of the bottle. By the way, the stopper is also made of this special stock, but in separate molds that are very like those just described. The metal reinforcement

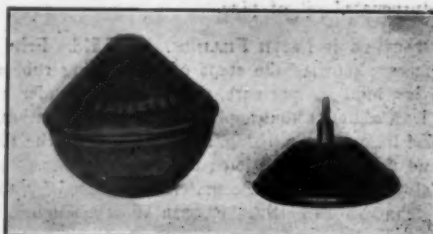


FIG. 3. FLUSH TANK BULB AND METAL CAP.

of the stopper and threads is covered with stock of the same compound as that of the funnel socket.

The next step in the process is to shape up the body portion of the bottle and at the same time attach the funnel which is done by the dies shown in Fig. 2. A sheet of regular stock is laid over the lower mold or die and the funnel core supporting the shaped-up funnel itself is placed in the constricted part of the mold with the threaded portion occupying its proper position in the neck of the bottle mold. The other end of the core extends outside of the molds and is provided with a valve through which air is pumped or "blown" through a hole in the core, into the interior of the bottle.

When the funnel core has been properly arranged in the lower mold another sheet of regular stock is laid on the upper mold

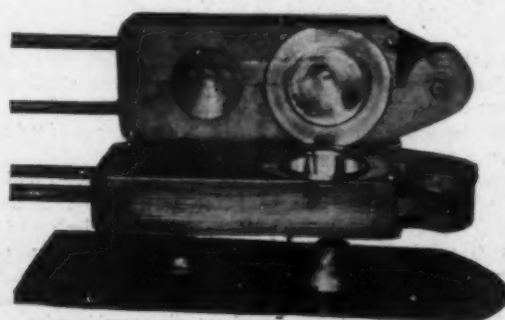


FIG. 4. TANK BULB HINGED SHAPING MOLDS AND CONE PLATE SHAPER.

and pressed in place, after which both molds are placed together and subjected to hydraulic pressure. At the same time air is forced into the bottle to prevent the sides from sticking together. The action of the dies is not only a forming one, shaping and practically welding all joints into a homogeneity, but a shearing one by which the overflow is smoothly and neatly trimmed from the outside edges.

The seamless water bottle is now almost finished; however, there still remains the final curing or vulcanizing process, which

is performed in a different set of molds and is therefore another story.

NOVEL SHAPING MOLD FOR TANK BULBS.

In the making of relatively small hollow rubber articles such as bulbs of various sorts and sizes, the component parts are usually cemented together by hand and finished in molds under pressure. If any defects are developed in goods made in this way, the weakness is invariably shown by breaks or leaks in the seams.

That inventive thought and marked mechanical skill have been brought to bear correctly on these inherent faults in bulb construction, is forcibly shown in the following description of a new tank bulb and the novel molds for making them.

The old type of flush tank bulb was just an ordinary round hollow rubber ball suspended by a lift rod that was fastened to the ball in any convenient way and was usually inefficient and a constant nuisance. Marked improvements are indisputably possessed by the newest type of tank bulb with the rigid top. In the first place it keeps its shape, for the reason that the upper half is rigid. Then the lower half is half round and made of good quality soft, flexible rubber that insures a positively water-tight contact between the bulb and valve seat.

In Fig. 3 will be seen the object in question with the metal reinforcement on the right that imparts rigidity to the upper half of the bulb by being securely vulcanized therein. Then comes the hinged shaping mold—that is shown in the position for filling and emptying by the two following illustrations. Referring first to Fig. 4 will be seen the mold open with the cone plate shaper in front of it. The ball plate shaper is not shown in either illustration as its function will be clearly understood by the description of its use that follows in the context.



FIG. 5. TANK BULB HINGED SHAPING MOLD—OPEN.

A round disk of suitable diameter is cut from a sheet of regular stock and pressed into the lower mold by the cone shaper. The metal cap then follows, and over this another disk of thin rubber is placed and pressed home by the shaper, thus forming the rigid cone shaped half of the bulb.

The lower half or ball part is then covered with a round disk of sheeted stock of suitable thickness which is pressed in place by the ball plate shaper. The two mold parts, which in reality are cutting as well as forming dies, are then placed together—the upper and lower halves being aligned by dowel pins—and the whole subjected to hydraulic pressure. In this way the edges are homogeneously united and the bulb, therefore, is made absolutely seamless, a feature, it would seem, that up to the present time is unique in articles of this description.

Now that this bulb has been satisfactorily shaped there remains still the question of getting it safely out of the mold without injury, as crude rubber stock is soft and easily damaged. This is accomplished by an ingenious construction of the shaping mold, the two halves of which are divided longitudinally and hinged at one end. Thus by the simple process of opening the mold along its vertical plane the completed bulb is easily removed, as can be clearly seen in Fig. 5.

SHAPING MOLDS FOR AEROPLANE INNER TUBES.

Just how far the use of dies and molds can be carried in the actual production of inner tubes for automobiles remains to be seen; however, the scheme apparently has practical possibilities capable of further development. The following description and

illustrations relate to the forming and vulcanizing of inner tubes used in the tires of aeroplane wheels.

The molds, or rather dies, are shown in the illustrations, Fig. 6 and Fig. 7. In the former the ring core and mold for shaping up



FIG. 6. AEROPLANE TIRE INNER TUBE SHAPING MOLD AND CORE. FIG. 7. AEROPLANE TIRE INNER TUBE PRESS MOLD.

one half of the tube is illustrated, the other half mold not being shown. In practice, the sheeted stock is cut in circular or ring form and laid on the lower shaping mold and upon that the circular core is pressed, thereby shaping up one-half of the tube. The other half is formed by another circle of rubber placed as before in the upper mold half and pressed home by the same circular core that was previously used.

Now the two halves of the inner tube are in their respective molds, seen in Fig. 7, and ready to be placed together. Before this is done the air valve must be fixed in its proper position. This is carefully inserted in the cavity provided for it and then the two mold halves, aligned by dowel pins, are placed together and subjected to hydraulic pressure. The result is an absolutely seamless, endless inner tube being formed by pressure and the action of the edges of the upper and lower shaping molds. The complete inner tube is then removed and placed in special vulcanizing molds in which it is cured by heat and pressure.

"SIMPLEX" PIPE JOINT CLAMP.

Pipe joint leaks cost money and often make it necessary to take down the entire line, an expensive procedure when the mill is rushed with orders and working overtime. A handy device that can be quickly applied and one that it is claimed will effectively stop the leak is the "Simplex," which consists of an outside two-part ring, an inside split ring and a square packing ring. To use, the packing ring is first forced against the leaky joint, the inside split ring is next forced against the packing, and the outside ring is bolted around the pipe to prevent slipping. [Yarnall-Waring Co., Philadelphia, Pennsylvania.]

SHALER'S NEWEST REPAIR VULCANIZER.

A new garage electric vulcanizer with capacity for 200 tubes and 12 casings a day differs from the larger steam vulcanizers in that the heat is generated from the city service by connecting with any lamp socket. [C. A. Shaler Co., Waupun, Wisconsin.]

ENGLISH SCHOOLS OF REPAIR VULCANIZING.

The instruction classes held at the City and West End Vulcanizing Schools of Harvey Frost & Co., Limited, London, are intended for those who wish to have actual instruction in the general repair of tires and inner tubes, according to the Harvey Frost process. As the cost of tuition and materials is considerable, a nominal fee is charged, and when the pupil is proficient, he is given a certificate. A certificate can also be obtained by submitting satisfactory repairs executed in accordance with the printed instructions issued by the company. The Harvey Frost Diploma of Merit is further granted by the directors of the schools to those pupils who have shown exceptional ability in making repairs.

PLANTATION SMOKE HOUSE PRACTICE.

THERE is a phenomenon in connection with plantation sheet rubber known as "stretching rusty or resinous," according to B. J. Eaton in "The Tropical Agriculturist" (November, 1915), that brokers frequently attribute to excess resin in the particular rubber. Although this condition probably has no effect on the real quality of the rubber, it affects its market value and should be remedied.

The appearance which is usually produced when the dry rubber is stretched or lightly scratched resembles powdered resin. This phenomenon is due to a sweating or exudation of the serum left in the rubber, which comes to the surface as the sheet of rubber contracts on drying. If this is unable to drain off or if it is not removed it evaporates and leaves a thin film on the surface. This film is not obvious until the rubber is stretched or scratched when it breaks up and on account of the reflection and refraction of light caused by the small particles its appearance is indicated by a deposit resembling powdered resin.

An investigation has been made of surface slime formation on slab rubber. The fresh coagulum from the ordinary pans, which had been only rolled or pressed lightly and contained a large proportion of residual serum, showed a large amount of this deposit. An analysis of the slime after drying completely in a desiccator yielded nitrogen corresponding to a total protein content of over 60 per cent. The remainder was chiefly resin and mineral salts.

The remedy for this fault is simply after machining and making the sheets to wash in one or two changes of water and if necessary to scrub the surface slightly with a stiff brush before placing them in the smoke house.

SMOKE ROOM CONTROL.

Temperature.—The usual method of controlling the temperature in a smoke house is by means of a maximum and minimum thermometer. It is preferable, however, to use an automatic recording instrument to check the work of the operator.

Dampness.—In the case of "sweating" of the rubber in the smoke houses and the deposition of moisture on the interior of the building, it has been found that outside smoking arrangements were employed with a flue leading into the smoke room. As a rule, exterior smoking arrangements are unsatisfactory. The principle of smoking is slow combustion, producing a product rich in antiseptic constituents; consequently to obtain a good smoke the fuel must burn at a comparatively low temperature. Many of the products of this slow combustion, although volatile, are easily condensed, and with an exterior furnace and long flue, these products condense in the flue or near the end entering the smoke room, and the water vapor which passes through condenses in the smoke room itself, on the rubber and on the walls and roof of the room and causes "sweating" or deposition of moisture. Where the fuel is burnt in the smoke house itself in boxes or holes in the ground there is sufficient heat to drive the water vapor out and only the other products are left to diffuse into the rubber.

One factor in connection with smoking which is frequently not realized is that the drying caused by the heat is far more effective as a preventive of mold than the actual smoke products, creosote, etc.

It has been actually stated by scientific workers that where mold appears on smoked sheet the rubber could not have been properly smoked. This is entirely erroneous, as the common mildews will grow most readily on the best smoked sheet if given the proper conditions of moisture.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Machinery; Rubber Trade Directory.

RUBBER FOOTWEAR PRICE LISTS.

FOR a decade or more, previous to last year, the United States Rubber Co. sent out its new price lists of footwear, its terms to retailers and to jobbers, so that they got into the hands of the wholesale trade all over the country on January 1. Last year, because of the expressed desire of a majority of the wholesale shoe dealers, the announcement was postponed to March 1. This year the company reverted to its previous policy, and the new price lists of footwear made in the several factories of the company were so mailed that they reached the customers January 1.

These new lists are practically the same in detail, as regards prices, as those sent out March 1, 1915, the only changes, which were few, being a variation of five cents or less in individual lines.

As has been the custom in most years the company offers an extra discount of five per cent. for early orders, thus practically making prices that much less than those prevailing during the last half of 1915.

Other rubber footwear manufacturers, as in previous years, were but a few days later than the United States Rubber Co. in publishing prices.

The Hood Rubber Co. in its price list varies in minor details, some lines being slightly higher, others a few cents lower, but on the whole it is much the same as that of the older company.

The Beacon Falls Rubber Shoe Co. will issue a net price list, instead of gross price list with discount, and here also prices are nearly the same.

The B. F. Goodrich Co. issues a wholesale price list of its "Hipress" goods which varies somewhat from the prices of patent pressure process goods manufactured by the United States Rubber Co. In some instances the Akron prices are considerably higher, while in others the variation is only two or three cents, generally higher, but in a few instances lower.

It is evident that when these prices were made it was on a basis of cheaper cost than is possible at this writing. It seems as if these prices must have been determined upon as early as December 1, or thereabouts, when crude rubber was quoted at below the present prices.

The increase in the cost of plantation and wild rubbers would seem to justify an early revision of the price lists, and as all these are "subject to change without notice" the wholesale trade is placing orders to an extent unprecedented for so early in the year. In fact, some manufacturers have already enough orders for early delivery to keep their mills extremely busy for two or three months, and some anxiety is expressed as to the possibility of securing sufficient crude rubber to cover requirements.

THE NEW TENNIS PRICES.

On Friday, January 21, the United States Rubber Co. withdrew its price list of sporting and outing shoes, which had been in operation since September 1. A new list was sent out to reach the wholesale trade by January 24. This list showed an advance in practically all lines of rubber-soled canvas footwear, with the single exception of basket-ball shoes.

The general advance is about five per cent, though some lines, mainly the low-priced ones, show a higher percentage. The Admiral oxfords and bals, which were priced respectively at \$2.25 and \$2.50 net, are now \$2.40 and \$2.65. Other lines show an advance of from two cents to ten cents a pair, most of them being either five or ten-cent advances over September prices.

NEW RESILIENT WHEEL WITH SOLID RUBBER TIRES.

A western concern is manufacturing a new resilient motor truck wheel to be used in connection with solid rubber tires. The elastic mechanism is enclosed in the hub of the wheel, which otherwise is of standard type and can be quickly attached to any car.

Proposed S. A. E. Rubber Standards.

At the meeting of the Society of Automobile Engineers, held January 5 and 6 in the Engineering Societies' Building, New York City, the Standards Committee made many recommendations. Those on insulated wire and cable, rubber hose and clamps, industrial truck tires and solid tire diameters, which are of special interest to rubber manufacturers, are printed below.

It should be noted that these recommendations were favorably received and will be voted on for adoption by a letter ballot of the society which will be polled early in March.

INSULATED WIRE AND CABLE.

The following standards for insulated wire and cable to be used on gasoline cars, were formulated:

CLASS A—RUBBER COMPOUND INSULATED SECONDARY CABLE.

The insulation of this cable shall consist of a vulcanized compound of virgin rubber containing not less than 30 per cent by weight of good dry Upriver Para or *Hevea* rubber which will stand the following tests:

A test-specimen of rubber compound taken from a cable having a length of not less than 6 inches shall have marks placed upon it two inches apart. The sample shall then be stretched at the rate of 12 inches per minute until these marks are 6 inches apart; the test-specimen shall then be released within 5 seconds and a measurement taken one minute thereafter, when the distance between these marks shall then not exceed $2\frac{3}{8}$ inches. The test-specimen shall then be stretched until marks are 9 inches apart before rupture. This test shall be made at a temperature of not less than 10 degrees C. or 50 degrees F.

The ultimate tensile strength of the rubber compound shall not be less than 1,000 pounds per square inch calculated upon the original cross-section of test-specimens before stretching. This test shall be made at a temperature of not less than 10 degrees C. (50 degrees F.).

Each specimen of rubber insulated cable shall successfully withstand a voltage test of 12,000 A. C. for 5 minutes after 12 hours submersion in water and while still immersed.

After the voltage test, the cable while still immersed shall have an insulation resistance of 2,500 megohms per mile at 15.50 degrees C. (60 degrees F.) after one minute electrification. These two tests shall be made in accordance with the standard rules of the A. I. E. E.

Any one-foot sample of this rubber insulated cable must show a dielectric strength sufficient to resist through 5 minutes the application of 20,000 volts A. C. This test shall be made as specified in the National Electric Code.

The following aging test should be made to determine the life of the cable: Take a length of cable, preferably 5 feet, remove insulation from both ends, solder one end of cable to the end of a steel rod of same diameter as outside diameter of cable, wrap the cable tightly around this rod and solder the other end of cable to the rod so that it will retain its tightly wrapped condition. Leave exposed in this condition to the elements. If cable is not properly compounded and properly vulcanized, deterioration effects, such as hardening, becoming brittle and cracking will begin to be apparent in from one to three months.

Secondary cable is to be made in two sizes as shown by Table I. The overall diameters are 7 m.m. and 9 m.m. respectively for plain rubber insulation. If a varnished cotton braid is desired the same dimensions are to be used with the addition of glazed cotton braid approximately 1/64 inch thick, making the overall diameters 5/16 inch and 3/4 inch respectively. The braid is to be treated with at least two coats of insulating varnish dried separately.

TABLE I—SECONDARY CABLE.

Nominal Size	No. of Wires	Diam. of Wires	Circular Mils	Diam. over Wire	Diam. over Rubber (Max.)	Thickness of Rubber (Min.)
....	26	.010	2600	.065	.280	.100
....	37	.010	3700	.072	.360	.125

CLASS B—RUBBER COMPOUND INSULATED PRIMARY CABLE.

The insulation of this cable shall consist of a rubber compound and two thicknesses of fabric. The compound is to be evenly applied in thickness as specified in Table II, and must conform to the physical and electrical requirements of the National Electric Code (latest edition).

The rubber compound to be covered first either with an overlapping strip of varnished cambric .008 to .010 inch thick, or a cotton braid at least 1/64 inch thick, so saturated as to make it oil and moisture-proof.

The first fabric is to be covered with an outer braid of strong protective character and at least 1/64 inch thick, preferably glazed and treated with at least two coats of insulating varnish dried separately.

The completed cable shall be capable of withstanding for one minute one thousand volts A. C. applied between the copper conductor and a metal foil wrapped around the outside of insulation. The frequency of the test circuit shall be in accordance with the standard rules of the A. I. E. E.

TABLE II—RUBBER COMPOUND INSULATED PRIMARY CABLE.

Cable Size	No. of Wires	Diam. of Wires	No. of Strands	Circular Mils	Carrying Cap. Amp.	Diam. over Braid	Thickness of Rubber (Max.)	Thickness of Rubber (Min.)
No. 14	41	.01003	1	4,100	...	.080	.22	1/32"
No. 12	49	.0113	1	6,208	...	.102	.25	1/32"
No. 10	49	.0142	1	9,854	...	.128	.27	1/32"
No. 2	133	.0226	19	67,764	92	.340	.53	3/64"
No. 1	133	.0254	19	85,466	102	.380	.60	1/16"
No. 0	133	.0285	19	107,743	127	.427	.65	1/16"
No. 00	133	.032	19	135,926	150	.480	.71	1/16"

Stranding—Number 14 to be bunched; numbers 12 and 10 to be bunched or rope lay; numbers 2, 1, 0, 00 to be rope lay.

RUBBER-HOSE AND CLAMPS.

Sizes for hose and hose-clamps are submitted (see table) for standardization. They cover hose in all sizes commonly used for water connections and tire-pumps. There is considerable variation in thickness of hose of the same ply, but generally 1/32 inch of hose thickness is allowed for the inside rubber lining, 1/32 inch for the outside, and 1/16 inch for each ply of fabric. The table was prepared accordingly with the addition of the tolerance limits.

SIZES OF HOSE-CLAMPS AND HOSE-FITTINGS.

Inside Hose Diameter	Outside diameter of hose and extended inside diameter of clamps.				Length of Fitting for Lap of Hose
	Single-ply	Two-ply	Three-ply	Four-ply	
3/16	7/16	1/2	9/16	5/8	1
1/4	1/2	9/16	5/8	11/16	1
5/16	9/16	5/8	11/16	3/4	1
3/8	5/8	11/16	3/4	13/16	1
1/2	3/4	13/16	3/4	15/16	1
5/8	1	1 1/16	1 1/8	1 3/16	1
3/4	1 1/8	1 5/16	1 3/8	1 7/16	1 1/4
7/8	1 3/8	1 9/16	1 5/8	1 11/16	1 3/4
1 1/8	1 5/8	1 13/16	1 7/8	1 15/16	1 3/4
1 1/4	2	2 1/16	2 1/8	2 3/16	1 3/4
1 1/2	2 1/8	2 5/16	2 3/8	2 7/16	1 3/4
1 3/4	2 3/8	2 9/16	2 5/8	2 11/16	1 3/4
2	2 5/8	2 13/16	2 7/8	2 15/16	1 3/4
2 1/8	3	3 1/16	3 1/8	3 3/16	1 3/4

Limits on inside diameter of hose $\pm 1/64$. Limits on thickness of hose (not measured at lap) $\pm 1/64$. All dimensions in inches.

INDUSTRIAL TRUCK TIRES.

It is recommended that the standard nominal diameters of industrial truck wheels shall be 10, 16, 20, 22 and 27 inches. On the data sheet with the wheel diameters shall be printed a footnote indicating the present tire sections recommended by the Association of Railway Electrical Engineers.

SOLID TIRE DIAMETERS.

It is recommended that the 32-inch diameter be dropped from the standard list of truck wheel diameters. This is done because it is found that commercial cars with wheels as small as 32 inches are almost always fitted with pneumatic tires, and 32-inch tires form a very small percentage of the total output of solid tires.

The 34-inch tire is recommended for inclusion in the list of sizes. There has been considerable demand for the inclusion of this size in the S. A. E. standards, and the recent circulation of a document signed by tire and wheel makers has served to draw out comment and results in this recommendation.

The data sheet is to be rearranged to indicate that only tires of 34, 36 and 40 inches are S. A. E. Standard, although data on the other sizes is to be printed as a guide for tires of other than standard sizes.

Continuous Process Tire Manufacture.

THE two things that all of the manufacturers of motor tires have been working toward for the past five years have been, first, an ideal fabric for the carcass and, second, a continuous mechanical process in the making and curing.

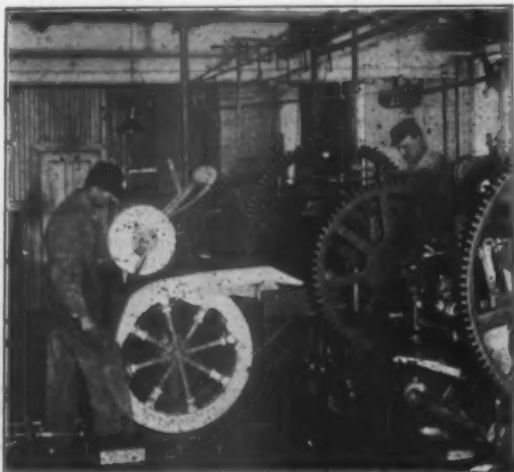
In the attempt to produce the strongest and most durable fabric

the Doughty Tire Co., Providence, Rhode Island. When the Doughty patents were issued some few months ago they were described in this publication from the patent office drawings. Now we are able to show views of the most important machines in operation.



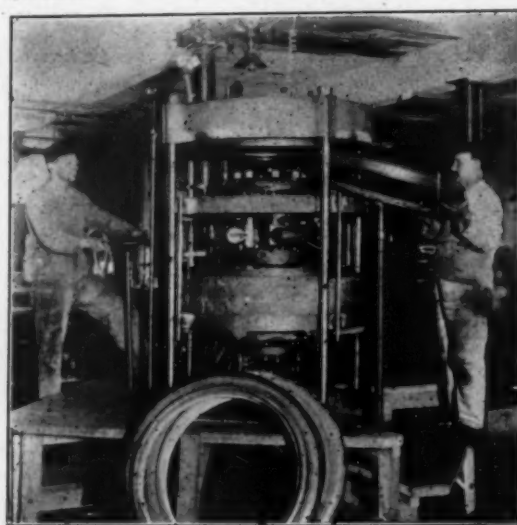
LOOM FOR WEAVING FABRIC EXACT SHAPE AND WIDTH FOR TIRE CARCASS.

there have been evolved two distinct types, the woven fabric and the cord fabric. Of the former hundreds of different weaves were tried before the present standard weave was adopted. In use this fabric is frictioned, cut into strips on a bias cutter and the strips pasted end to end and wound into rolls ready to be applied to the tire core. The cord fabric is, of course, built up by special cord laying machines.



BUILDING THE TIRE CARCASS WITH FABRIC DIRECT FROM THE FRICTION CALENDER.

While many tire making machines have been invented and scores of others are in use as accessories to tire manufacture, only one has made the loom and the calender a part of the continuous process. That one is the Doughty process, owned by



STEAM HEATED, HYDRAULIC TIRE PRESS MOLD WITH ELECTRICALLY HEATED EXPANSIBLE CORE.

The process begins with the weaving of the fabric in bands, the exact width of the tire carcass. The weave is so arranged that the strip comes from the loom shaped as it will be when made up into a tire.

This strip of fabric is next passed through a calender, the rolls of which are shaped to it, where it is frictioned. Directly from the calender it is wound hot upon the tire core.

The carcass next goes to the tire press mold where, with an expansible electrically heated core on the inside and the usual



SPECIMEN OF THE DOUGHTY FABRIC.

steam heat in the platens, it is cured in 15 to 20 minutes. The time required for the whole process is about 30 minutes.

So far tests of tires made show unusual mileage, while the owners of the process claim that they save 50 per cent in time and labor over existing processes.

These machines are now assembled in Providence. So far the company have not attempted to manufacture tires for general use, as the plan is to lease the machinery on a small royalty basis.

New Machines and Appliances.

SAFETY STOP AND MAGNETIC CLUTCH-BRAKE FOR MILLS.

THIS is a safety stop device for use in rubber mills where a quick and reliable means of throwing off the driving power and applying a powerful brake to stop the mill line is necessary to prevent injury or loss of life of operators who may be caught in the mill rolls or gearing.

A highly perfected safety device that has been subjected to most rigorous tests in millroom requirements is illustrated herewith. The equipment consists of a synchronous motor drive mounted on a common sub-base with a driven rope sheave, the magnetic clutch-brake furnishing the connection between the motor and the rope sheave. The motor is rated at 650 horsepower, runs at 240 R. P. M. and under normal conditions carries practically full load when the mill line is operating.

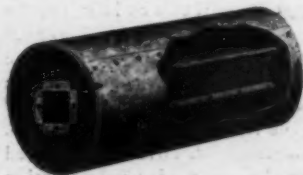
Throughout the millroom safety switches are mounted on the frame of each mill and trip rods are located above the rolls



within easy reach from each side of the mill. The safety switches are arranged in series electrically so that the magnetic clutch will be disengaged and the brake simultaneously applied when this safety rod is tripped in case of an accident. To start the machinery again with its heavy load a single push button is provided in the motor room which engages the clutch energized by an automatic rheostat in such a way that the load is picked up gradually. [The Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin.]

"JUMBO" STEAM JACKETED MIXER.

The improvement during recent years in machines for building tire casings has been so radical that manufacturers of machinery and appliances have been extremely busy in meeting the present demands for improved machinery. Gammeter's galvanized steel tire machine drum was specially designed to meet the urgent requirements of modern tire building. It is used for handling the fabric or rubber stock from which tire casings are made. In construction it is strong, rigid, light and durable. It is 8 inches in diameter and 16 inches long and will fit any size mandrel. [W. F. Gammeter; Cadiz, Ohio.]

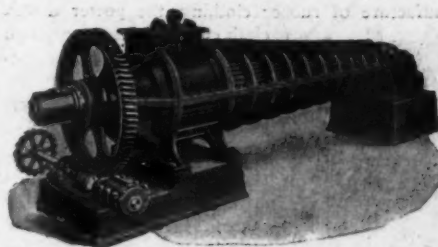


SCREW PRESS AND ROTARY DRYER FOR RUBBER WASTE.

In reclaiming, the process of drying washed rubber waste has been greatly facilitated and production cost materially reduced

by the automatic continuous screw press and direct steam heated air dryer shown in the accompanying illustrations. As the machines are installed together the process therefore is a continuous one.

The American screw press consists of a horizontal tapered screw built up on a hollow perforated shaft arranged to allow the admitting of steam to the material if desired. The screw fits closely inside a similarly tapered, slatted curb and rotates. The wet waste is delivered from the washers to



the feed hopper of the press where the material is mechanically measured and forced into the straight, purely conveyor part of the screw. This carries the waste into the tapered part, where it is slowly and positively pressed, forcing out the liquids. The press is fitted at the discharge end with an adjustable cone arrangement by which the desired pressure is produced in the press.

The waste after passing through the press is delivered to the hopper of the rotary dryer and comes in contact with the air, heated by being blown over steam coils in the heater. The waste falls to the bottom of the dryer, is caught up and lifted to almost the highest point of rotation

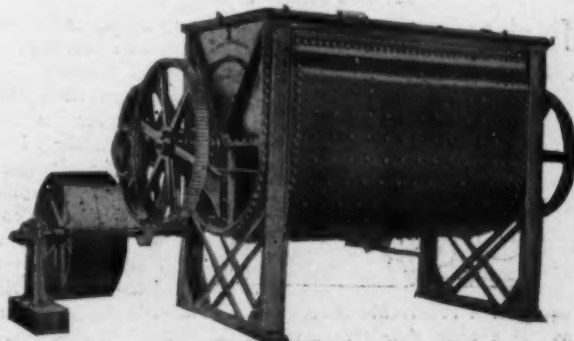


and is then showered through the hot air. This cycle of operations is repeated until the material, in a dried condition, is discharged from the lower end of the dryer. It is claimed that by this method waste can be dried in less than half an hour. [American Process Co., New York City.]

"JUMBO" STEAM JACKETED MIXER.

This mixer and churn is made in sizes of from 1 to 25 barrels capacity, and with or without a steam jacket.

Designed especially for rubber manufacturers and to withstand



hard usage, the "Jumbo" mixer is of unusually heavy construction. It is a machine that can be adapted for many uses as, for mixing, heating and drying powdered materials, for mixing pastes of all kinds, and for dampening preparations under heat. This

type of machine is made with special agitators adapted to the various materials to be mixed, including the rubber cements used by manufacturers of rubber goods.

The gearing on the mixer is made to suit any class of material, from the lightest liquid pastes to the heaviest cements that can be drawn off through a 6 or 8-inch opening. As shown in the illustration the mixer is provided with a tight and a loose pulley for belt drive. [J. H. Day & Co., Cincinnati, Ohio.]

ELECTRIC CLOTH CUTTER.

For cutting up many plies of materials such as cotton goods used in the manufacture of rubber clothing, the power driven cloth cutter is a necessary and indispensable part of the factory equipment.



The vertical blade machine shown in the illustration possesses many excellent features in construction and is claimed to have successfully withstood the most rigorous tests in many rubber clothing factories. The foot or stand which supports the machine is made interchangeable to any desired size; that is, the machine can be equipped with a very narrow standard for cutting sharp curves, as in

collars, cuffs, neckbands, belts, pocket flaps, etc.

The vertical knife is reciprocated by a powerful air cooled motor from either direct or alternating current, and the weight is so placed that perfect balance and ease of manipulation is obtained. The blade can be readily removed at the front of the machine and the presser foot is easily adjusted to the work, requiring no readjustment when sharpening the blades.

A novel feature is the shaded electric light that illuminates the work, thereby greatly aiding the operator in accurate cutting. The switch, of an approved type, is controlled from the handle, and the base is provided with ball bearing rollers that reduce the friction in passing over the goods to a minimum, thereby insuring facility and accuracy in operation.

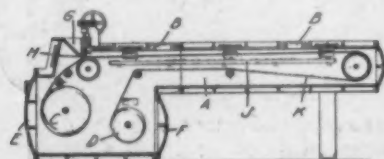
The Universal cutter is made in sizes that will cut lays from 3 to 6 inches high and is guaranteed by the makers against mechanical or electrical imperfection for one year. [Universal Cutter Co., St. Louis, Missouri.]

MACHINERY PATENTS.

DEVINE'S SPREADING MACHINE.

IN this machine for proofing fabrics the spreading and drying operations and the recovery of the volatile solvents are conducted in a closed chamber under a partial vacuum.

Referring to the diagram, a longitudinal cross-section view,



drum, *E* a removable front plate for introducing the fabric and *F* a back plate for removing the roll of proofed fabric. The other main parts include the feed hopper *G*, the spreading knife *H*, the heating table *J* and the fabric *K*.

In operation the coating material flows from the feed hopper upon the fabric and is spread as it passes under the

A represents the vacuum drying chamber, *B* openings for the pipes leading to the condenser and air pump, *C* delivery drum, *D* receiving

knife or doctor. This coating material is dried as the coated fabric passes through the drying chamber and the vapors of the volatile solvent released in this drying operation are drawn off by a pump and recovered in a condenser. As this operation is carried on in a vacuum, the solvent is evaporated at a comparatively low temperature and the drying is effected quickly and thoroughly, preventing the escape of the vaporized solvent. [J. P. Devine, United States patent No. 1,164,174.]

HEATED FORM FOR DIPPED GOODS.

To obviate the necessity of drying by exposing the dipped form to the air after each dipping operation, Williams has invented a form, heated on the interior, to cause the solvent to evaporate rapidly from the coat of material on the form.

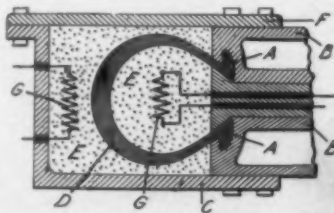
The present invention provides for uniform heat throughout the form and a reduction of the time necessary for drying.

The drawing shows a hollow glove form *A* made of bronze. At the wrist portion is a closure *B* with an opening *C*, through which is poured the volatile liquid *D*. Tube *E* is threaded at its open end and heat is transmitted to the liquid by this tube and the inner pipe *F*, which is connected to the supply pipe *G*.

In practice the form is inverted and filled about two-thirds full with liquid, which is preferably gasoline. When still in this position, the form is heated in any suitable manner until the liquid boils freely and vapor passes off through the opening. The opening is sealed while the liquid is still boiling so that only the vapor and the liquid itself exist inside the form. Then the form is attached to the pipe from the heating source and a uniform heat throughout will result and be maintained during the dipping operation by the washing back and forth of the liquid. [Carl S. Williams, assignor to Revere Rubber Co., United States patent No. 1,163,053.]

ELECTRIC TIRE MOLD.

By the use of a mobile material as soapstone or sand instead of the tire core and the usual two-part mold or cloth wrapping, Price claims to overcome many of the present difficulties in curing tires. To accurately shape beads it is



necessary that they should be clamped and to prevent sagging of the tread it should be supported, especially during the initial vulcanizing heat.

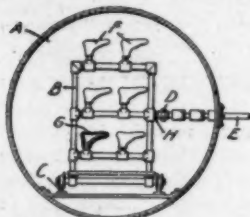
Referring to the drawing, the beads *A* are clamped in the plates *B*, to the lower one of which is attached a box-like structure *C* inclosing the tread *D*. The soapstone, sand or mica *E* surrounds and incloses the tread completely as shown. If pressure is to be exerted in the box, cover *F* is bolted down and the shoe thus arranged is ready for vulcanization which is accomplished by means of the electric resistance coils *G* and steam or electric coils in plates *B*.

In a modification of the above a hollow metal core is used instead of the soapstone or like substance, in which either steam or electric coils are the vulcanization agents. [R. B. Price, assignor to Rubber Regenerating Co., United States patent No. 1,162,397.]

FOOTWEAR VULCANIZING APPARATUS.

In Rutherford's vulcanizer, articles may be subjected to the action of a controllable pressure which establishes and maintains the same pressure conditions in all parts of the chamber.

The accompanying cut shows a vertical section of the vulcanizing chamber *A*, which accommodates four cars. The car *B* consists of a tubular frame that runs on tracks *C* and is connected by union *D* to pipe *E* leading to the suction pump. Arranged on the frame are hollow forms *F* supporting the articles to be vulcanized. These forms or lasts are provided with fluid ducts *G* to permit the withdrawal of moisture in the article. The pipe system is so arranged in the chamber that the openings *H* into each of the four cars are equi-distant from the pump. By this arrangement the effective suction or pressure will be equal at all the openings and the vulcanized articles will show a greater uniformity of quality. [E. W. Rutherford, assignor to Goodyear's Metallic Rubber Shoe Co., United States patent No. 1,161,892.]



PNEUMATIC TIRE CASINGS are made by laying on the core, diagonally, transversely, or circumferentially, strips of leather impregnated with rubber solution. [A. M. Kobiolke, Kew, near Melbourne, Australia. British patent No. 23,320, 1914.]

OTHER MACHINERY PATENTS.

THE UNITED STATES.

ISSUED DECEMBER 14, 1915.

- 1,163,651. Cementing machine. L. W. G. Flynt, Rochester, N. Y., assignor to United Shoe Machinery Co., Paterson, N. J.
- 1,163,695. Clamp for pneumatic tires. M. C. Schweinert, West Hoboken, N. J., and H. P. Kraft, New York, N. Y.
- 1,164,054. Vulcanizing apparatus. J. W. Arthur, Warren, Ohio.
- 1,164,174. Apparatus for coating fabrics. J. P. Devine, Buffalo, N. Y.
- 1,164,345. Collapsible core. D. R. Hanawalt, assignor of one-half to M. D. Kuhlke—both of Akron, Ohio.
- 1,164,619. Vacuo centrifugal fiber and fabric treating machine. H. P. Jefferson, Boston, Mass.

ISSUED DECEMBER 21, 1915.

- 1,164,639. Internal pressure tire vulcanizing apparatus. J. R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.
- 1,164,650. Strip cutting machine. A. B. Ireland, F. L. Ireland and H. A. Ireland—all of Norwich, N. Y.
- 1,164,669. Cloth cutter. J. Steinman, assignor to (Mrs.) E. Victor—both of Chicago, Ill.
- 1,164,804. Bead placing ring. J. R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.
- 1,164,850. Apparatus for treating latex and sheeting the coagulated product. L. Norzagaray, London, England.
- 1,165,176. Insulated wire stripping tool. H. A. Horner, Philadelphia, Pa.
- 1,165,288. Vibration absorbing motor stand. J. G. Rimmer, Dorchester, Mass.
- 1,165,306. Laboratory vacuum drier. H. E. Allen and F. T. Mitchell—both of Washington, D. C.
- 1,165,361. Braiding or cord making machine. W. G. Pegg, assignor of one-half to A. Turner & Co., Ltd.—both of Leicester, England.

ISSUED DECEMBER 28, 1915.

- 1,165,495. Machine for covering wire, cord, elastic and the like. E. W. Cooper, Coventry, England.
- 1,165,564. Recording thermometer. F. E. Amthor, assignor to The Schaeffer & Budenberg Manufacturing Co.—both of Brooklyn, N. Y.
- 1,165,635. Machine for truing valve packing rings. A. E. Swaim, Osage, Okla.
- 1,165,644. Tire bandage for open cure. H. A. W. Wood, New York, N. Y.
- 1,165,807. Tire bandage wrapping machine. R. G. Rossman, Seattle, Wash.
- 1,165,934. Compensating thermometer. F. E. Amthor, assignor to The Schaeffer & Budenberg Manufacturing Co.—both of Brooklyn, N. Y.
- 1,166,250. Tire building machine. J. E. Perrault, Belmont, assignor to Hood Rubber Co., Watertown—both in Massachusetts.
- 1,166,357. Pressure reducing valve. J. Graham, Glasgow, Scotland.
- 1,166,358. Fluid pressure regulator. P. M. Grant, assignor of one-half to C. Kuhnle—both of Chicago, Ill.

ISSUED JANUARY 4, 1916.

- 1,166,625. Collapsible core. H. E. Nye, Akron, Ohio.

- 1,166,669. Fabric band for making tires. J. R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.
- 1,166,682. Electromagnetic separator. C. T. Henderson, assignor to The Cutler-Hammer Manufacturing Co.—both of Milwaukee, Wis.
- 1,166,876. Repair vulcanizer. J. Yemiker and W. S. Vosburgh—both of Akron, Ohio; said Vosburgh assignor to said Yemiker.
- 1,167,009. Tread vulcanizer. E. Nail, assignor to The Goodyear Tire & Rubber Co.—both of Akron, Ohio.
- 1,167,036. Thermostatic regulation for heated rolls. G. S. Whitman, Sr., Hudson Falls, and A. Roesch, Brooklyn, assignors to C. J. Tagliabue Manufacturing Co., Brooklyn—all in New York.
- 1,167,165. Exhaust heated repair vulcanizer. C. W. Griffith, assignor of two-thirds to J. Neason and S. A. Trees—all of Altoona, Pa.
- 1,167,172. Repair vulcanizing core. W. L. Heinig and M. A. Johnston—both of Denver, Colo.

ISSUED JANUARY 11, 1916.

- 1,167,396. Process of making a golf ball core. J. R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., a corporation of New York.
- 1,167,976. Overflow trimming machine. D. R. Campbell, assignor of one-half to F. Rumrill—both of Boston, Mass.

ISSUED JANUARY 18, 1916.

- 1,168,390. Apparatus for manufacturing rubber tubing. B. B. Goldsmith, New York, N. Y.
- 1,168,820. Repair vulcanizer for tires and other articles. W. H. Miles, Longton, England.

THE UNITED KINGDOM.

ISSUED DECEMBER 8, 1915.

- 18,196 (1914). Roller for removing creases and stretching textile fabrics. J. Matter, Laeken, near Barmen, Germany.
- 18,259 (1914). Cloth cutter. J. Sanderson, 27 Scarisbrick street, and H. Wheeler, 102 Kensington Road—both in Southport.
- [ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 30, 1915.]
- 19,026 (1914). Tire fabric tensioning device. S. G. S. Dicker, 20 Holborn, London. (Miller Rubber Co., Akron, Ohio.)
- 19,142 (1914). Machine for coating tapes with rubber. J. W. H. Dew, and Azulay Syndicate—both of 8 Laurence Pountney Hill, Cannon street, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 31, 1915.]

- *19,509 (1914). Tire wrapping machine. H. J. Doughty, Edgewood, Rhode Island.
- 19,542 (1914). Circular loom for weaving tubular fabrics. E. C. R. Marks, 57 Lincoln's Inn Fields, London. (Chernack Manufacturing Co., Pawtucket, Rhode Island.)

THE FRENCH REPUBLIC.

PATENT ISSUED (With Date of Application).

- 477,402 (January 26, 1915). Device for inflating pneumatic tires. C. W. Tarbet.

NEW MANUFACTURING PROCESSES.

THE UNITED STATES.

ISSUED DECEMBER 14, 1915.

- 1,163,987. Manufacture of rubber articles. W. J. Eggers, New York, N. Y.
- 1,163,999. Process for making treads for tires. W. Henry, Nottingham, England.
- 1,164,196. Process of manufacturing water bags or bottles. I. F. Kepler, Akron, Ohio, assignor to The B. F. Goodrich Co., a corporation of New York.

ISSUED DECEMBER 21, 1915.

- 1,164,860. Process for eliminating porosity in rubber goods. W. E. Piper, Melrose, assignor to Boston Rubber Shoe Co.—both in Massachusetts.
- 1,165,198. Process of manufacturing seamless rubber gloves. T. W. Miller, assignor to The Faultless Rubber Co.—both of Ashland, Ohio.

ISSUED JANUARY 11, 1916.

- 1,167,759. Process of making bulbs for tank valves. A. T. Hopkins, Cleveland, Ohio, assignor to The Mechanical Rubber Co., a corporation of New Jersey.

ISSUED JANUARY 18, 1916.

- 1,168,807. Packing and process of making. C. L. Hill, Lancaster, assignor to United States Asbestos Co., Manheim—both in Pennsylvania.

THE UNITED KINGDOM.

ISSUED DECEMBER 8, 1915.

- 17,981 (1914). Packing for piston rods and plungers. W. J. Mellersh-Jackson, 28 Southampton Buildings, London.

THE FRENCH REPUBLIC.

PATENTS ISSUED (With Dates of Application).

- 477,204 (June 3, 1914). Process and apparatus for vulcanizing rubber by means of ultra-violet rays. H. Olivier.
- 477,238 (June 5). Process and apparatus for treating rubber latex. E. Ripeau.
- 477,422 (January 27, 1915). Dress shields and process of manufacture. Madam P. Oettinger.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 31, 1915.]

- 19,413 (1914). Asbestos and rubber packing. G. W. Beldam, Boston Lodge, Ealing, London.

The Editor's Book Table.

PHYSIOLOGICAL PRINCIPLES FOR DETERMINING THE VALUE of the Various Rubber Tapping Methods. Founded on some experiments made on *Hevea Brasiliensis*. By Professor Dr. Hans Fitting, "The Times of Ceylon" Co., Limited, London, England. [Paper covers, 51 pages, with four diagrams. Price, 1s. and R 1.]

THE rubber planter is interested not only in bringing his property to a state of commercial productiveness, but is equally concerned in prolonging the period of its return upon his outlays. In other words, he wants to get as much as he can and as long as he can out of his trees through proper handling.

Vitally involved in this problem is the question of how best to tap them. This subject has been treated suggestively by Professor Dr. Hans Fitting, one of Germany's foremost physiological botanists. The learned savant studied the subject at close range in the Malay States and in Java, and as a result of many experiments came to certain definite and valuable conclusions. These he put forth in an admirable brochure, which for the first time is now rendered in English.

PRACTICAL EXPORTING. A HANDBOOK FOR MANUFACTURERS AND MERCHANTS. By B. Olney Hough, The Johnston Export Publishing Co., New York City, 1915. 8vo, 632 pages, with 39 inserts of forms. [Flexible leather, \$5; cloth, \$4.]

For the manufacturer about to branch out into export trade, this book will prove of inestimable value, while the firm with an established department will find it a compendium of useful information.

The book has been arranged with the object of making possible quick and direct reference to any special problem. Each phase of the business is treated in a separate chapter, with frequent side heads. The volume opens with a brief summary of the growth of American export trade and a description of the immensity of the world market that lies at our gates.

The manufacturer hesitating to enter this market will find ample encouragement and guidance in the exhaustive presentation of the subject. He will learn of the facilities for export trade, of the customs and methods that are advantageous. The basic rules for exporting are given so that misunderstandings of the export problems are explained and mistaken ideas of credit terms corrected. The relative values of foreign markets are discussed, as are the requirements concerning patents and trade-marks.

Emphasis is laid on the specialized attention that the export business requires, even if a separate department may be deemed unnecessary and suggestions are given concerning proper organization and conduct. The author, whose practical export experience has extended over 20 years, goes into detailed description of the machinery for developing export demand and trading, which consists of correspondence, traveling salesmen, commission houses and advertising.

He especially urges the consideration due export orders in the matter of prompt attention. There is an interesting presentation of the methods of making price quotations, and a description of foreign ratings. Much detailed information is given concerning the preparation of merchandise for shipment, calculation of export weights and measurements, the addressing of packages and the rendering of invoices. Methods of marketing shipments are described and incidental ocean freight rates, consular and other formalities are explained, together with marine insurance.

The book closes with an excellent presentation of the methods of financing foreign business and systems of credits and collections. The text is supplemented by 39 insets, which are reproductions of documents in actual use, comprising a compilation of the papers and forms usually involved in every step of an export transaction, from the receiving of the order to the final payment.

A HANDBOOK OF WEAVES. BY G. H. OELSNER, DIRECTOR OF the Weaving School at Werdau. Translated and revised by Samuel S. Dale, The Macmillan Company, New York, 1915. 18vo, 397 pages, 1,875 illustrations, including a supplement, "Analysis of Weaves and Fabrics," by the translator.

The student of textiles and in fact all who are interested in the production of fabrics should take advantage of the technical knowledge this volume affords. The book is confined practically to the complicated art of weave construction which is described in clear, concise language that can readily be understood. The illustrations are particularly clear and graphically convey to the reader a complete understanding of the various weaves used in fabric construction.

The book begins with the very important subject of drawing-in drafts; that is, drawing the warp yarn into the harness, an operation upon which depends the successful production of the weave pattern. Then follow explanations of the weave draft or plan for interlacing the warp and filling. The twist of the yarn and the set of the threads are explained graphically, followed by clear-cut descriptions of all sorts of weaves—plain, twill, satin rib and crepe.

Back warp fabrics are weaves, with an extra set of warp threads on the back. While single, double and tubular fabrics are familiar to the layman by name only, all of these many fabric weaves are made clear by orderly context and illustration. Each succeeding chapter carries the interested reader along through the labyrinth of special weaves and fabrics and finally closes with a description of how to determine the weave and fabric construction of a certain woven cloth.

NEW TRADE PUBLICATIONS.

NEW CATALOGS OF THE UNITED STATES RUBBER CO.

THE new footwear catalogs of the various factories of the United States Rubber Co. were issued so as to reach the dealers on January 1, as has been the custom.

This year the number of booklets has been materially decreased, due to the fact that the various main catalogs contain on the last pages of each book the net price lists. These principal catalogs, each measuring $4\frac{1}{2} \times 8\frac{1}{2}$ inches, are attractively printed on heavy coated paper and illustrated with half-tone cuts that faithfully reproduce the extensive lines of goods shown. Each book has a distinctive cover design, printed in attractive colors. These nine catalogs used to describe footwear bear the names of the following companies: American, Banigan, Boston, Candee, Goodyear Glove, Lycoming, Meyer & Jersey, Wales-Goodyear, and Woonsocket.

In addition to these the United States Rubber Co. has issued the following literature in booklets $3\frac{1}{2} \times 6$ inches in size: 24-page booklet describing miscellaneous goods; 16-page gross price list of miscellaneous goods; 16-page catalog and price list of "Empire" brand rubber boots and shoes; 24-page net price list of "Unika" brand rubbers; 12-page catalog and price list of the Everstick rubbers; 16-page catalog and net price list of Wales-Goodyear patent pressure process goods and United States Rubber Co.'s "Naugasole" goods; the unlisted list; leaflets of bathing and sporting shoes, and the net price list of the Medford Woolen Manufacturing Co.

A new catalog issued by the Canadian Consolidated Rubber Co., Limited, Montreal, Canada, which has 28 service branches throughout the Dominion, is an attractive book of 90 pages, well printed on good quality coated paper, in black and colors. Many of the illustrations, which are particularly good, show the articles in natural colors, greatly adding to the pleasing appearance of the catalog, in which the titles and descriptions are printed in both English and French.

The B. F. Goodrich Co., Akron, Ohio, has sent out its wholesale price list of "Hipress" rubber footwear, a neatly printed booklet showing in appropriate colors the company's brown and white rubber specialties with the red line round the top. Felt boots and socks are also included in the price list.

The Apsley Rubber Co., Hudson, Massachusetts, has sent out a small booklet, dated January 1, giving net prices of its Granger line of red and white boots and lumbers, made by special process.

"Echoes from the Convention," is a little 12-page booklet containing the address given by Colonel Samuel P. Colt, president of the United States Rubber Co., to the footwear salesmen of that company at a convention held in Boston late in December. In his address Colonel Colt stated that the business of the world is to be carried on by great corporations which, because of the magnitude of business, can employ men of the highest order. There are many concerns, managed on most magnificent principles, that are building up our country and have enabled us to compete with the world in the manufacture of rubber goods.

CALENDARS AND SOUVENIRS.

IN addition to the calendars and souvenirs that were noted in the January issue of THE INDIA RUBBER WORLD as having been distributed to the rubber trade at the holiday season, attention may be called to the following:

An attractive 9 x 13 inches, delicately colored sepia print, depicting an old music master at the piano with his pupil, a quaintly costumed little girl, is mounted on a large white background which bears a calendar pad and, in modest lettering, the name of the Adamson Machine Co., manufacturer of rubber working machinery, Akron, Ohio.

A calendar in which each month is featured and the previous and coming month are shown less prominently, thus affording a convenient business reference, was distributed by George F. Lufbery, Jr., manufacturer of chemicals, Elizabeth, New Jersey.

With a separate leaf for each day of the year and with a date printed in 3-inch prominent figures, the pad being securely attached to a dark blue card which may be hung on the wall, the calendar of the Stamford Rubber Supply Co., manufacturer of rubber substitutes, Stamford, Connecticut, forms a useful adjunct to a business office.

Hamilton E. Bast, manager of the Hamilton Rubber Manufacturing Co. and the Acme Belting Co., Chicago, Illinois, has distributed a pleasing art calendar with a sepia print of "The Lass That Loves a Sailor."

The Hygienic Rubber Works, manufacturer of dental vulcanite, Muskegon, Michigan, has sent its friends an attractive art calendar.

Among the most useful calendars of the season is the desk memorandum or engagement pad that has been distributed by the Electric Hose & Rubber Co., manufacturer of rubber hose, Wilmington, Delaware.

Keystone tubes, boots and patches are attractively advertised by the pictorial calendar distributed to the trade by the Keystone Rubber Manufacturing Co., Erie, Pennsylvania.

A nicely made diary for 1916, containing colored maps and much interesting and useful information, has been issued by John Royle & Sons, manufacturers of looms, tubing and insulating machines, and strainers, Paterson, New Jersey.

Stanley Doggett, dealer in chemicals, New York City, distributed a large office calendar, with a leaf for each month on which the preceding and following months are conveniently displayed in lighter type.

A brass holder for scratch paper for desk use was distributed

with the compliments of the Katzenbach & Bullock Co., importer and dealer in chemicals, Trenton, New Jersey.

A large wall calendar illustrating the modern Rip Van Winkle has been sent to the trade by the R. J. Caldwell Co., Inc., dealer in tire fabrics, New York City.

Perhaps no more acceptable New Year's souvenir was distributed than the combination brass calendar and clip mounted on an attractive base that was sent to friends by Ernest Jacoby, dealer in crude rubber and compounding ingredients, Boston, Massachusetts.

RUBBER TRADE INQUIRIES.

[148] An inquiry has been received from South Africa for masticated rubber and rubber compounds for manufacturing purposes.

[149] If a manufacturer of machines for inflating toy balloons will send his name to this office we will be pleased to forward it.

[150] Where can aluminum forms for making nipples by dipping be obtained?

[151] An inquiry is received for a tough, rubber-like composition not affected by heat or cold, and with some resiliency.

[152] A correspondent seeks a rubber manufacturer who will make about 10,000 rubber dolls, according to a given design.

[153] An inquirer desires the names and addresses of manufacturers of rubber specialties.

[154] An inquiry has been received for Pontianak resin.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

A commission agent in France desires to purchase 20,000 bottle-shaped tin cans with screw stoppers and rubber washers. Report No. 19,647.

An English firm is in the market for large quantities of superior quality black rubber bellows. Report No. 19,650.

A business man in Peru desires to purchase a repairing outfit for vulcanizing tires. Report No. 19,722.

An agent in Switzerland desires to represent American manufacturers of sanitary rubber goods and other articles. Report No. 19,808.

A firm in South Africa desires to secure agencies from American manufacturers of waterproof bathing caps and other articles of wearing apparel. Report No. 19,822.

A Danish firm wishes to represent manufacturers of tires and general accessories. Report No. 19,865.

Communication with American manufacturers of rubber stamps, fountain pens, etc., is desired by a firm in India. Report No. 19,867.

A Central American firm desires catalogs and samples from American manufacturers of rubber belting and other articles. Report No. 19,869.

Quotations from American exporters of rubber-covered wires are desired by a firm in India. Report No. 19,885.

Automobile dealers in an insular possession desire to represent American manufacturers of automobile tires. Report No. 19,892.

Commercial relations are desired by a firm in Spain with American manufacturers of hard rubber irrigators. Report No. 19,900.

A surgeon in Spain would like to purchase medical rubber goods from American manufacturers. Report No. 19,911.

A firm in Spain desires to import waterproof cloth in wholesale quantities for making clothing. Report No. 19,919.

New Goods and Specialties.

PERFORATED MATTING IN ROLLS.

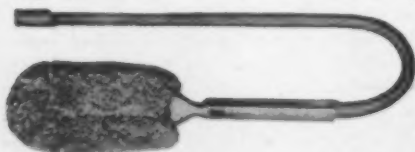
RUBBER matting, as a substitute for the old-style fiber matting, or carpet runners, have grown steadily in favor as a floor covering, especially for use in public buildings. Its wearing qualities are excellent, and it is pleasant to walk upon, being soft and yielding to the step. Easily cleaned, and non-absorbent, it is especially well suited for use in damp or wet places. Perforated rubber matting has been used for years, with



uniform success, but a new development in this line is shown herewith, in the form of rolls of matting, from which mats can be cut in any length desired, the widths manufactured ranging from 18 to 36 inches. This form of matting is convenient for dealers, since they do not need to keep a supply of the various sizes, and can accommodate their customers with a greater latitude in size than the cut mats allowed. [The Mechanical Rubber Co., Cleveland, Ohio.]

CONVENIENCES FOR DISH WASHING.

Dish washing is evidently becoming one of the fine arts. The mop superseded the cloth, to the decided benefit of women's hands, and now there is a device which not only does away with the necessity of immersing the hands in the water, but supplies clean water. As shown in the illustration, the



cotton mop is attached by two small screws to the hexagon-shaped handle connected to the rubber tube, thus allowing the mop to be taken off and renewed. The rubber tube is fastened to either the hot or cold water faucet, carrying the water through the mop and affording a constant flow of clean water, regulated to any volume.

In another similar brush there is a self-soaping device, the water flowing down the rubber tube and driving through a soap box before reaching the bristle brush used for dish washing. [Fuller Brush Co., Hartford, Connecticut.]

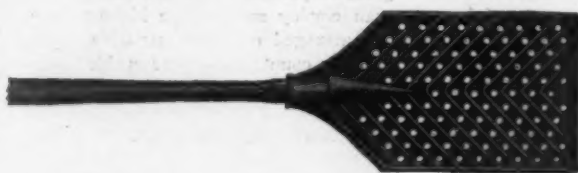
THE AQUA-PHONE.

This name might in justice be changed to the Aqua-Detector-Phone, if a descriptive title be desired, for the instrument is designed first to detect escaping water and then to telephone the information to the operator. In appearance and size it is an exact counterpart of the standard telephone receiver. The outer part is made of hard rubber, and it is composed entirely of this material and aluminum. It is used to detect leaks in water pipes, and its operation is simple. A metal rod is driven into the ground,

or the key placed in position on a street surface valve, as the case may be; the point of the Aqua-Phone is touched to the rod, when, if there is a leak nearby, the sound of escaping water can be heard through the receiver. It may also be used in factories and other places where the continued wastage of metered water is costly. [Aqua-Phone Co., Cincinnati, Ohio.]

THE "SANITARY" FLEXIBLE RUBBER FLY SWATTER.

Many different materials, wire perhaps being the most general, have been utilized in destroyers of that persistent enemy of peace and good temper, the fly. Rubber as used in the "Sanitary"



fly swatter, illustrated herewith, has many advantages over other materials, as it will not rust, no matter how salty the atmosphere, or injure the furniture. The soft, flexible rubber adapts itself to any angle, conforms to the shape of the surface against which it is struck and can be washed and kept perfectly clean. This fly swatter is supplied with a straight or turned handle as desired. [Standard Vending Machine Co., Hazleton, Pennsylvania.]

THREE NEW RAINCOAT MODELS.

The latest models of raincoats for men and women show style and individuality as created by the well-known makers of "Kenreign" garments, combining modish cut with high quality.

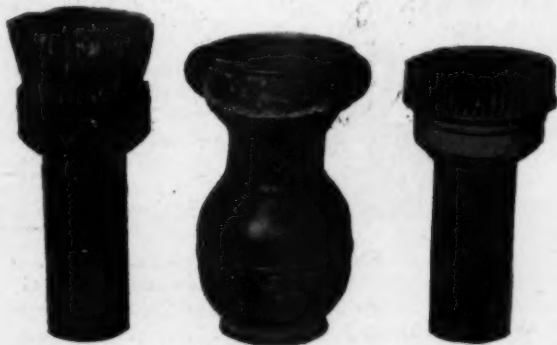


These raincoats are made in single and double texture rubberized fabrics, proofed by the "Kenreign" process. The single texture goods have a fancy art design proofing of pure Pará rubber on the back of the material which gives a very pleasing effect. They are made in various colors, light and dark tan, however, being the most popular.

The style and quality of these coats are such that they are actually worn as much in fair, as in rainy weather. As an automobile garment they are unsurpassed, being dustproof as well as rainproof, and can easily be slipped on over the usual cloth, affording a comfortable and highly presentable protection. [C. Kenyon Co., Brooklyn, New York.]

A NOVEL SHAVING BRUSH.

For the traveler, to whom economy of space and convenient availability of shaving materials are necessary, this all rubber device has been invented. On the left in the illustration is the brush holder that also contains the soap and which fits into the massage brush shown on the right. Sufficient hot

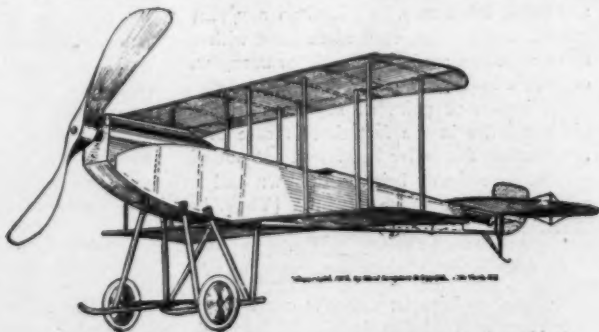


water for producing a foamy lather is contained in the holder shown in the center of the picture. When the sartorial function is finished the two active parts of the brush can be compactly fitted into one another and finally into the holder. [Robert Webb, Brooklyn, New York.]

MODEL AEROPLANES DRIVEN BY RUBBER STRANDS.

Model aeroplanes are now made that are perfect reproductions of their larger prototype and on an exact scale reduction. The three-foot model appears to be the most popular and is furnished in the various types that are now familiar to everyone. A popular model is that of the famous monoplane, Bleriot XI, which made the first successful flight across the English channel. Another is a perfect replica of the famous Taube monoplane used by the German and Austrian armies.

Our illustration shows the Curtiss military biplane tractor that



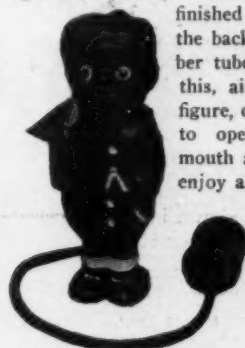
is used by the United States government, and is rapidly replacing the pusher type of aeroplane. An excellent flyer is the three-foot model Curtiss flying boat that, owing to its waterproof and sturdy construction, makes a splendid motor boat. The Wright biplane and the Curtiss convertible hydro-aeroplane are supplied in the three-foot model sizes and are very popular types, particularly with the older devotees of the game. There are also gliders, speed-planes, aero-tops and various other flying toys that are primarily designed for amusement, but doubtless could all be used effectively for demonstrating the principles of aviation.

The motive power of these miniature flying machines is developed by rubber strands that are twisted or wound up like a spring and which, when released, drive the propeller shaft for a period of time, depending on the length and thickness of these rubber strands. As shown in the illustration rubber tired wheels are

also used and stream-line disc wheels add to the apparent realism of these clever mechanical toys. [Ideal Aeroplane and Supply Co., New York City.]

A JAPANESE NOVELTY.

The new Japanese novelty shown in the illustration is the figure of a "danky" made of a papier-mâché-like composition and finished in natural and attractive colors. To the back of the figure is attached a small rubber tube and a cylindrical bulb. By pressing this, air is forced to the figure, causing the "danky" to open and close his mouth as though about to enjoy a luscious bite from the realistic slice of watermelon held in his right hand. [A. A. Vantine & Co., Inc., New York City.]

**A RUBBER DOLL THAT TALKS.**

One of the unique novelties of the season, shown in the illustration, is a rubber doll, with a semblance of cozy winter costuming in the shape of mittens and a high, pointed hood tied under the chin. The feature that children most appreciate in this toy is that when the head is squeezed by a pressure of the hand, the doll responds by uttering sounds in a squeaky voice.

PHILLIPS' "MILITARY" SOLES AND HEELS.

A timely innovation in rubber soles and heels designed with especial regard to the needs of military service consists of thin rubber plates, provided with raised studs that are attached to ordinary soles and heels, as shown in the accompanying illustration. The manufacturer claims that the rubber used in these plates is six times more durable than leather and that they not only keep the feet dry, no matter what the weather, but by their gripping qualities and the smoothness they impart to the tread greatly lessen the fatigue of long marches. This form of heel and sole protection is equally adapted for athletic sports and country wear. [Phillips' Patents, Limited, London, England.]

**POCKET SCREW DRIVER WITH RUBBER HANDLE.**

In this compact tool there are four blades of different widths, any of which may be readily taken from the telescope handle as required and inserted in the end where it locks automatically and is firmly held for use. The handle is covered with hard rubber for insulation from electrical currents, and its ribbed surface insures a firm grip for the hand. The blades may all be kept in the handle, a spring pressure preventing them from rattling when carried in the pocket or being lost when the cap is off. [The L. S. Starett Co., Athol, Massachusetts.]



The tendency of the end of the suction tube of a bulb syringe to close by adhering in contact with a smooth surface has been effectually obviated in this type of syringe by vulcanizing to the inlet a flat loop or ring of rubber of the same quality as that of the tube. [Mechanical Rubber Co., Cleveland, Ohio.]

PHONOGRAPH DIAPHRAGM WITH RUBBER RING.

The old method of holding the mica diaphragm of a phonograph sound box in place possessed many inherent defects. For instance, the invariable-rubber gasket usually held the delicate sheet of mica rigidly, thereby depriving this vibrating membrane



of complete efficiency. The new idea, shown in the accompanying cut, consists of molding a ring of rubber stock around the mica disk and thus vulcanizing it in a mold. The result is increased tone production and the elimination of troublesome mechanical noise. [Wm. Eggers & Sons, Brooklyn, New York.]

THE THRESHER TRENCH COAT.

This overcoat is especially adapted for war purposes and has received the commendation of the British War Office. It is

double-breasted, with an extra high collar, and while waterproof and windproof, it combines warmth with lightness in weight. A chrome-dressed sheepskin lining is used or, if preferred, a detachable "Kamelcote" or detachable sheepskin lining is supplied. Knee flaps and saddle gussets are provided for mounted officers. [Thresher & Glenny, London, England.]



THE "GNIDROC" COAT.

A somewhat similar waterproof overcoat, especially suited to war uses, called the "Gnidroc," is shown in the second illustration. This coat is made in the raglan style, and comes in three weights, with or without fleece lining. [Geo. Cording, Limited, London, England.]



THE "BANDERSON" RUBBER TRIPOD SHOE.

In photography, after the correct focus has been obtained, the slightest movement of the camera will necessitate a repetition of the entire operation. When a tripod is used on slippery ground or polished floors, merely taking hold of the ball and tube, or inserting the plate-holder is apt to cause the tripod legs to slide, thus

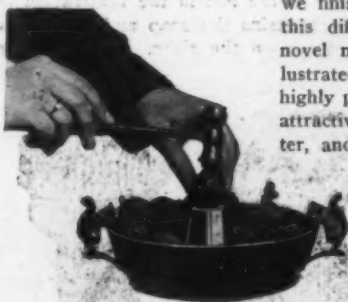


upsetting the camera. The rubber tripod shoe here shown presents a simple means by which all danger of these accidents may be avoided. It is made in three sizes, and will stretch to fit tripod feet of any shape. When not in use it may be left in position or removed by rolling back the rounded edge. [The Altrincham Rubber Co., Altrincham, England.]

NUT CRACKING DEVICE WITH RUBBER RINGS.

We used to crack nuts in the kitchen, with a flatiron between our knees, and the floor was apt to be strewn with shells before we finished. A way to overcome this difficulty is presented in the novel nut-cracking device here illustrated. The bowl is made of highly polished hard wood, with an attractively plated steel anvil-center, and a hammer also plated to match the anvil, the wooden hammer handle being finished the same as the bowl.

This outfit is intended for use on the finest dining room table, and the hammer is encircled at each end with rubber rings, which overcome all danger of scratching or marring any polished surface upon which it may be laid. [Parsons Nut Bowl Co., Indianapolis, Indiana.]



THE "UNIVERSAL" TUBULAR BED.

An improvement in the air or water cushion beds so useful in hospitals and sick rooms is the tubular bed that is illustrated herewith. Instead of only one compartment, this bed is composed of ten separate tubes. The advantages of this construction are that the patient's comfort is more readily secured, as the tubes can be regulated so as to relieve pressure on the body;



additional tubes may be added so any part of the body can be raised, or the tubes, even when filled with water, can be inclined to any desired angle, while the ordinary water bed can be used only in a horizontal position.

An important point of superiority that is claimed over the old form lies in the fact that in case of injury or accident to any section, the entire bed is not put out of commission, the imperfect tube simply being withdrawn and an extra one inserted, without disturbing the patient. [The Altrincham Rubber Co., Altrincham, England.]

THE "UMBRELLA TIDY."

In order to keep an umbrella cover from fraying at the edges, it is recommended that the ribs be fastened firmly together when



OPEN.



CLOSED.

it is closed. A new device for this purpose, made of ebony-black rubber that can be easily slipped over umbrella handles of all shapes, is called the "Umbrella Tidy." Once adjusted, it remains in place, ready for use when desired. As shown in the accompanying illustration, a

touch of the finger tips is all that is needed to reverse the position of the holder for the release or attachment of the umbrella ribs. [Reliance Rubber & Hardwood Co., London, England.]

The Obituary Record.

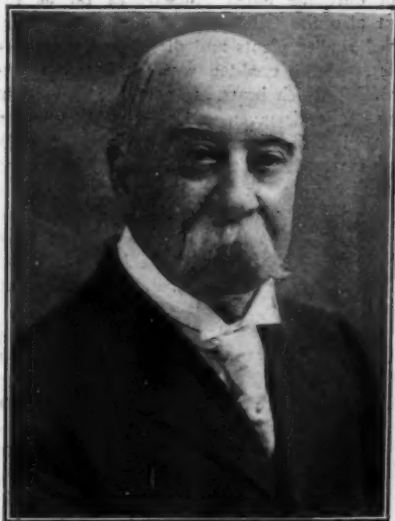
WATSON H. LINBURG.

WATSON H. LINBURG, president of the United & Globe Rubber Cos., and prominent in the business activities of his state, died after a long illness on January 5 at his home in Trenton, New Jersey, aged 76 years.

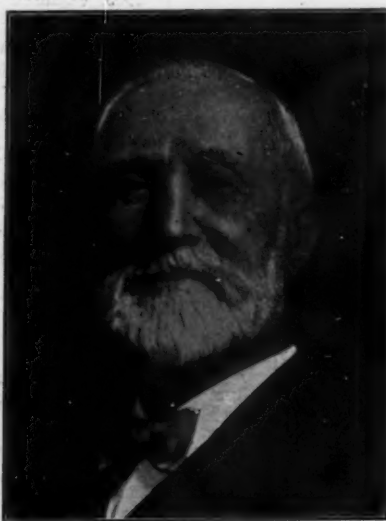
Mr. Linburg was born December 5, 1839, in Conshohocken, Pennsylvania. In his early manhood, during the Civil war, he enlisted in the Union Army, was taken prisoner at Chancellorsville and spent a long time in Libby prison. After the war he engaged

found but little time for outside interests. He was, however, a member of the Woonsocket Business Men's Association, the Friendly Sons of St. Patrick and the Christian Doctrine Society of St. Charles' Church.

After the funeral, which was conducted by the Rev. John H. Whitaker, 150 employes from the factory formed two lines between which the mourners marched, followed by bearers conveying the casket. The pallbearers, who were all men holding responsible positions in the Woonsocket factory, were as follows:



WATSON H. LINBURG.



WILLIAM LYALL.



MICHAEL M. FLYNN.

in the dry goods business until he transferred activities to the rubber field.

Mr. Linburg's connection with the rubber industry dated from 1878, when he became a member of the Hamilton Rubber Co. With characteristic thoroughness, he mastered all the details of the business and it was not long ere he was regarded as an authority in his line. In addition to filling the office of president of the United & Globe Rubber Cos., he was president of the Globe Tire Co., vice-president of the Spring Lake Hotel Co., and served as director of the First National Bank of Trenton, the Standard Fire Insurance Co., the Inter-State Fair Association and the Mercer Hospital. He was vice-president of the Lotus Club of Trenton and member of the following organizations: Trenton Country Club, Golf Club of Spring Lake, Railroad Club of New York, Historical Society of Pennsylvania, Pennsylvania Society and the Trenton Masonic Lodge. He is survived by his widow and a daughter, Mrs. Horace B. Tobin.

MICHAEL M. FLYNN.

Michael M. Flynn, general manager and superintendent of the Woonsocket factory of the American Wringer Co., died on December 30, 1915, after a brief illness.

Mr. Flynn was born in Woonsocket, Rhode Island, January 3, 1858. When a mere lad he entered the employ of the Bailey Wringer Machine Works, which factory later became the Woonsocket factory of the American Wringer Co. He gradually worked himself through the different departments of the concern and was made superintendent in 1890, and for the last quarter century he has devoted all his energies to the promotion of the wringer business. Ever absorbed in his family, Mr. Flynn

Jesse P. Walsh, John F. Sweeney, John T. Gahan, William Makins, Samuel N. Greenwood, James W. Quinn, Charles Yahraus and William Fogarty.

Mr. Flynn is survived by his widow, two sons and two daughters.

WILLIAM LYALL.

William Lyall, venerable president of the Brighton Mills, Passaic, New Jersey, designer of innumerable types of tire fabrics, died suddenly on January 13 in the seventy-sixth year of his age. He was the son of Charles Lyall, of Dunfermline, Scotland, and Mary Cooper, of Perth, Scotland. The father came to the United States in 1839, and soon laid the foundations of a prosperous commercial career.

William Lyall was born on October 28, 1840, in Jersey City, New Jersey, and in 1861 commenced his commercial career. Success marked his efforts from the start, and he rapidly built up a thriving business, being successively connected with the Planet Mills, the United States Corset Co., the Chelsea Jute Mills and other manufacturing enterprises.

In later years he established the J. & W. Lyall Loom and Machine Works, for the manufacture of textile machinery, particularly the positive motion loom, of which his brother and partner, James Lyall, now deceased, was the inventor. This loom was a marked improvement in weaving machinery, and was the basis of many other textile enterprises. Associated with his brother in the early development of special fabrics, he was the pioneer in tire fabric making, that has developed from the hose pipe bicycle tire of 1895, to the present day auto tire of exacting requirements.

William Lyall will long be remembered by his many friends in the rubber tire trade with genuine appreciation and regard. His inherent courtesy of manner and genial kindness endeared him to those who were fortunate enough to come within the sphere of his influence.

At the time of his decease, Mr. Lyall was senior member of the firm of J. & W. Lyall and also president of the Brighton Mills, manufacturers of standard and special tire fabrics, Passaic, New Jersey. He was a director in several banks and fire insurance companies, and identified with various social and charitable organizations, and also a member of the Union League Club, and the Chamber of Commerce of New York City. He has had a long and intimate connection with St. Andrew's Society, having served as manager, second vice-president, first vice-president and president.

Mr. Lyall is survived by his widow and six sons and daughters: William L. Lyall, treasurer of the Brighton Mills; Charles E. Lyall, Herbert J. Lyall, Kitty E. Lyall, Earl H. Lyall and Pamela W. Lyall.

GEORGE H. F. SCHRADER.

George H. F. Schrader, formerly president of A. Schrader's Son, Inc., Brooklyn, New York, died on November 15 on ship-board while en route from Iceland to Norway.

Mr. Schrader, who was 57 years of age, was the inventor of the Schrader valve for pneumatic tires. He withdrew from the business in 1904 and he devoted his attentions largely to philanthropic and humanitarian work. In 1907 he gave the "Caroline Rest" to the New York Association for Improving the Condition of the Poor, and since then supported this home practically unaided.

He spent his last few years abroad. In Iceland he interested himself in the 50,000 ponies that in winter are turned out to forage for themselves. He built shelters for the ponies and conducted a campaign of education among the people. He also established a "Caroline Rest" for needy Icelanders.

FREDERICK J. ALDEN.

On January 14 Frederick J. Alden, who had been in the employ of the Boston Belting Co. for thirty-seven years, passed away at his home in Winthrop, Massachusetts, after a four months' illness.

Mr. Alden was born in Somerville, Massachusetts, 60 years ago, and was educated in the public schools of that city. He started in the grocery and provision business in that city, and was quite successful, until a fire totally destroyed his business establishment. He then entered the employ of the Boston Belting Co., and later was promoted to the position of traveling salesman. For 30 years he represented the company in New England, the Maritime Provinces and the North Atlantic states. Possessed of a genial nature he was counted as a personal friend by his host of customers. He was an Elk, and a member of the United Commercial Travelers' Association. He married Miss Alice C. Olmstead, of Chelsea, who survives him.

J. K. LINDSAY.

J. K. Lindsay, office manager of the Toronto branch of the Canadian Consolidated Rubber Co., Limited, Montreal, Canada, died on December 26 after a brief illness.

Mr. Lindsay's business experience began with the Munster Bank in Ireland. After five years' service, he developed the spirit of adventure, traveling extensively for several years. Finally he settled down in Canada, where he obtained employment in the Canadian Bank of Commerce. Later he was offered the position of financial manager by a Montreal shoe manufacturing and jobbing house, where he acquired considerable experience in the footwear trade. Leaving this, he became secretary-treasurer of the J. D. King Co., where he remained until 15 years ago, when he entered a partnership in the rubber

and leather footwear business. On the dissolution of this partnership four years ago, he became accountant and office manager of the Toronto branch of the Canadian Consolidated Rubber Co., Limited.

During his entire life Mr. Lindsay was a keen student of men and affairs, and his dealings typified honor, fair-mindedness and zeal.

ERNST ULE.

A late number of the "Tropenpflanzer" chronicles the death in Berlin of Ernst Ule, one of the leading authorities on Brazilian rubber trees.

Professor Ule, who for many years held an important scientific position at the Botanic Gardens in Rio de Janeiro, from 1900 to 1903, explored not only the upper Amazon as far as the Peruvian frontier, but also the tributaries of that great river. On this tour he studied rubber plants and discovered a number of the *Hevea* varieties. He is credited with having first discovered the *Castilloa Ulei*, which bears his name. His account of the results of these studies is given in Engler's "Botanischen Jahrbüchern," XXXV, Fifth Edition, under the title of "The Rubber Plants of the Amazon Expedition and Their Meaning to the Geography of Plants." In the "Tropenpflanzer" (1905 Supplement I) he told of this expedition in an article entitled "Rubber Gathering and Rubber Trading on the Amazon," and in the same publication (page 788, 1907) he contributed "The *Hevea Discolor* as Producer of Rio Negro Rubber." An important book of his is entitled "The Vegetation of the Amazon Country."

On his return to Germany from Brazil, Professor Ule arranged and classified his extensive collections of tropical plants, and in 1906, the Bahia Rubber Syndicate of Leipzig sent him as expert to investigate the home of the Ceara rubber. On this expedition he discovered three new species of the *Manihot* variety and brought their seeds to Europe whence they were distributed to plantations throughout the world. He also wrote a book on these plants which he called *Manihot Dichotoma*, *Manihot Heptaphylla* and *Manihot Piahyensis* and which produce Jequie, Sao Francisco and Piahy rubber, respectively.

Professor Ule made his last long trip from 1908 to 1912, when he explored the northern branches of the Amazon and went as far as British Guiana. It is said he was the first expert to explore the Acre territory, which of all Brazilian land is richest in rubber. As a recreation during this tour in 1910 he visited Ceara and found time to make a thorough study of the "Boll Disease" of Ceara rubber. He was continuing the work on this subject when death overtook him.

Botanic science loses in Professor Ule a man of unusual strength, a tireless, energetic worker, a reliable investigator and a careful collector. He possessed a constitution that adapted itself to the damp, mosquito infested climate of the Amazon wilderness which enabled him to accomplish results where others have failed. Unlike many explorers he was equipped for his work by a thorough botanical education.

G. LEONARD PORTER.

G. Leonard Porter, managing partner in the Market Harboro Rubber Co., died December 11, 1915, in London, after a short illness. Mr. Porter belonged to a well-known Leicester family and was for 20 years associated with the company, during the latter portion of which period he served as managing director. He was about 40 years of age and unmarried.

HENRY SPEAKMAN.

Henry Speakman, head of the firm of Henry Speakman & Sons, rubber and asbestos merchants, Manchester, England, died suddenly at Brooklands in the 73rd year of his age. As a young man, over 30 years ago, Mr. Speakman started on his own account as a rubber merchant and mill furnisher, and later admitted his two sons to membership in the firm.

News of the American Rubber Trade.

ANNUAL MEETING OF THE REPUBLIC RUBBER CO.

THE fifteenth annual meeting of The Republic Rubber Co., Youngstown, Ohio, was held January 24 at the general offices in Youngstown.

The management reported that the tire business of the company had increased 69 per cent in 1915 over the previous year, and that all mechanical goods departments, which constitute about one-half of the concern's business, showed satisfactory increases, with the exception of the railroad supply department for air brake hose, steam hose, etc. In this line, demand and prices were very poor until the latter months of the year. At present there is marked improvement in volume and a little betterment in prices.

Taking all departments into consideration, the company had more business on its books January 24 than on any date in its history, and prospects are good.

The usual cash dividends at regular rates were declared. The old officers were re-elected as follows: Thomas L. Robinson, president; L. T. Petersen and J. H. Kelly, vice-presidents; C. F. Garrison, secretary; M. I. Arms, 2nd, treasurer. There were two additions to the board of directors: Henry M. Garlick, president of the Standard Oil Cloth Co., and R. E. Cornelius, president of the Mahoning National Bank.

David Tod, who has served on the board for some years, was not re-elected, at his own request, owing to the many calls upon his time; this being done with the understanding he will return to the board at an early date.

The board of directors is as follows: M. I. Arms, Robert Bentley, C. H. Booth, J. H. Kelly, L. T. Petersen, Thomas L. Robinson, John Tod, H. K. Wick, John C. Wick, H. M. Garlick and R. E. Cornelius.

WASTE MATERIAL DEALERS HAVE NEW QUARTERS.

The headquarters of the National Association of Waste Material Dealers have recently been removed from 170 Summer street to 185 Summer street, Boston, Massachusetts, where a suite of offices on the top floor of the Brown Building has been equipped with all the conveniences which members could desire. One of the offices has been fitted up especially as a room for members, with telephone and other conveniences, and should prove an attraction to those visiting Boston.

RUBBER COMPANY SHARE QUOTATIONS.

The following market quotations of the shares of rubber manufacturing companies on January 25 last are furnished by John Burnham & Co., 31 Nassau street, New York, and 41 South La Salle street, Chicago, Illinois:

	Bid.	Asked.
Ajax Rubber Co. (new).....	71	71½
Firestone Tire & Rubber Co., common.....	730	..
Firestone Tire & Rubber Co., preferred.....	113	..
Fisk Rubber Co., common.....	117	120
Fisk Rubber Co., 1st preferred.....	109	112
Fisk Rubber Co., 2nd preferred.....	120	..
Goodrich Co., The B. F., common.....	71½	71½
Goodrich Co., The B. F., preferred.....	110	112
Goodyear Tire & Rubber Co., common.....	340	345
Goodyear Tire & Rubber Co., preferred.....	114	..
Kelly-Springfield Tire Co., common.....	{ Old 292	298
	{ New 73½	74
Kelly-Springfield Tire Co., 1st preferred.....	96	96½
Kelly-Springfield Tire Co., 2nd preferred.....	74½	75
Miller Rubber Co., common.....	270	275
Miller Rubber Co., preferred.....	113	115
Portage Rubber Co., common.....	70	72
Portage Rubber Co., preferred.....	102	106
Swinchart Tire & Rubber Co.....	87	89
United States Rubber Co., common.....	54	54½
United States Rubber Co., preferred.....	107½	108½

THE HODGMAN NEW YORK OFFICE MOVES UPTOWN.

The completion of the interior furnishing and final preparations for occupancy of the Hodgman Rubber Co.'s new general office building at Tuckahoe, New York, marked an epoch in the history of that progressive company.

A full description, with an illustration of the building, then being erected, was published in the September issue of THE INDIA RUBBER WORLD, when it was stated that this company would move its entire office force from 806 Broadway, New York, to the new quarters, by January 1.

This, however, was impossible, owing to delays in construction work, and the removal was therefore deferred until January 29, when it was systematically accomplished without the slightest inconvenience to the routine of business.

A New York sales office has been established at 8 West Fortieth street, where the goods manufactured by the company will be displayed and customers served by an adequate sales force. This very central location, in the heart of the growing up-town business district, is most convenient. The nearby New York Central and Pennsylvania Railroad terminals, and the hotel district, make access easy to out-of-town buyers. Here the New York City trade will be handled by direct wire connection with the factory and an efficient auto-truck service will insure prompt delivery to local New York points. Out-of-town freight and express shipments will also reach their destination without appreciable loss of time, due to superior advantages afforded by effective co-operation of salesroom, general offices and factory.

VIOLATORS OF UNITED STATES CUSTOMS LAWS FINED.

When the neutrality squad of the United States Secret Service discovered that rubber constituted the contents of various trunks and boxes belonging to Mrs. Annie Dekkars, a passenger booked for Holland on the steamship "Ryndam," an interesting state of affairs was revealed. The sequel of this story as recorded in THE INDIA RUBBER WORLD, January 1, found an ending last month before Judge Clayton, of the Federal Court of the United States.

Subsequent to the indictment of the five persons found guilty of conspiracy in violation of the United States customs laws, by the federal grand jury, the following fines were imposed by Judge Clayton: Max Jaeger, \$1,500; Edward Weber and Paul Schmidt, \$750 each; Richard Wohlberg, \$100, and the Rubber & Guayule Agency, Inc., \$50. Mrs. Annie Dekkars, who was also indicted, but unable to appear in court on account of sickness, was later fined \$250, by Judge Clayton.

RUBBER CLUB INTERMEDIARY FOR RUBBER & GUAYULE AGENCY, INC.

When the British consul at New York refused to accept guarantees from the Rubber & Guayule Agency, Inc., recently fined in the federal court for breaking the customs laws, the Rubber Club of America, Inc., foresaw that an injury to innocent manufacturers would result. Accordingly it took up the matter vigorously with the British consul, who finally accepted the club's offer to act as intermediary. The result is that all contracts entered into with the Rubber & Guayule Agency, Inc., prior to December 21, 1915, will be handled through the Rubber Club.

PEACE SHIP CARRIED RUBBER IN PARCELS POST.

From a recent report issued by the British Foreign Office it appears that on searching the steamship "Oscar II," of erstwhile peace fame, 55 bags containing rubber were discovered in the parcels post mail. It is estimated that the amount of rubber thus apprehended was 4,000 pounds.

RUBBER COMPANY DIVIDENDS.

A quarterly dividend of 2 per cent on the first preferred stock and a quarterly dividend of 1½ per cent on the second preferred stock of the United States Rubber Co. was paid January 31, 1916, to stockholders of record January 15, 1916.

A quarterly dividend of 1¾ per cent on the preferred stock of the Westinghouse Electric & Manufacturing Co. was paid January 15, 1916, and a dividend of 1½ per cent on the common stock, January 31, 1916, both to stockholders of record December 31, 1915.

The directors of the Ajax Rubber Co. have declared a quarterly dividend of 3 per cent on the common stock of the company, payable February 1, 1916, to stockholders of record January 15, 1916.

A quarterly dividend of 3 per cent on the common stock of the Kelly-Springfield Tire Co. has been declared, payable February 1, 1916, to stockholders of record January 15, 1916.

THE NEW SHIPPERS' EXPORT DECLARATION.

Attention has been called by the Department of Commerce, to the "Shippers' Export Declaration and Export Procedure," issued December 14, 1915, containing regulations superseding those issued on September 15, 1915. The new order becomes effective February 1, 1916, instead of January 1, as originally planned, and as mentioned in THE INDIA RUBBER WORLD of December, 1915. As this pamphlet gives complete instructions and samples of blank forms for export shipments, it is important that all rubber manufacturers doing export business should have a copy, thus avoiding inconveniences and delay. Copies may be obtained from the Bureau of Foreign and Domestic Commerce, Washington, D. C., on application.

CRUDE CHICLE.

The Board of United States General Appraisers sustained the protests of Schutte, Bunemann & Co., New York City, and the American Chicle Company, St. Louis, Missouri, claiming that certain importations of chicle, which were returned as "refined chicle" should have been classified as "crude chicle." The merchandise was returned at 20 cents per pound under the provision in paragraph 36, act of 1913, providing for "chicle, refined or advanced in value by drying, straining, or any other process or treatment whatever beyond that essential to the proper packing." Under the same paragraph, it is claimed to be dutiable at 15 cents per pound as "crude chicle."

CHANGES IN AMERICAN CHICLE CO.

At the annual meeting of the American Chicle Co., Darwin R. James, Jr., C. D. Smithers, Warren C. Hayden, Silas B. Adams, Adam P. Leighton and George H. Worthington were elected directors. Mr. James was chosen president and Mr. Adams, vice-president.

TIRE REPAIR MATERIALS.

"Rie-Nie" is a new self-vulcanizing rubber compound for use on tire tubes, rubber footwear, etc., which is said to be an improvement on the customary patch. It is tough, strong, elastic and when it dries becomes a part of the rubber. [Durkee-Atwood Co., Minneapolis, Minnesota.]

Another new repair material is "Jovo," a tire seal claimed to preserve the rubber of the tire while preventing punctures. It is injected into the tube, the motion of which distributes it over the inner surface, and when a puncture occurs the air in the tube forces Jovo into the hole, as a sort of plug. A \$2 can is supposed to be sufficient for a 3½ to 4½-inch tube. [Joseph A. Vogel Co., Wilmington, Delaware.]

PERSONAL MENTION.

Theodore Hofeller, president of Theodore Hofeller & Co., Buffalo, New York, accompanied by Mrs. Hofeller, is spending the winter in Pasadena, California. Their son, Eugene D. Hofeller, is looking after his father's interests in the waste material business and also in the New Columbus Buggy Co., the Buffalo Electric Vehicle Co., and the Wellsville & Buffalo Railroad Corporation.

E. E. Wadbrook, of the firm of Arnold & Zeiss, New York City, has gone to Pinehurst and will spend his winter vacation golfing.

Kenneth Elwell, formerly with the Walpole Tire & Rubber Co., has accepted the position of factory manager of the Mechanical Rubber Co., Chicago, Illinois.

Freeman Carey has been appointed manager of the rubber department of The Carborundum Co., Niagara Falls, New York. He will have charge of the manufacture of vulcanite emery wheels.

The trade will be glad to know that C. H. Arnold, of the firm of Arnold & Zeiss, who for some months has been exceedingly ill, has recovered and is again at the Boston office.

S. P. Woodward has been promoted from the position of manager of the tire department of the New Jersey Car Spring & Rubber Co., Jersey City, New Jersey, to that of general manager.

Harry D. Dean, formerly assistant purchasing agent of the Davol Rubber Co., Providence, Rhode Island, resigned on January 1 to become purchasing agent of the Davidson Rubber Co., Charlestown, Massachusetts.

F. W. Dunbar, manager of Aldens' Successors, Ltd., New York City offices, spent a short vacation last month in the mountains of South Carolina.

Dr. L. H. Baekeland, on January 11, was awarded the Perkin medal for applied chemistry, by the New York Section of the Society of Chemical Industry.

H. B. Niblette has resigned his position as general manager of the Buffalo, New York, branch of The F. B. Goodrich Co., Akron, Ohio, with which company he was connected for seventeen years.

E. Stevenson, managing director of Aldens' Successors, Ltd., returned to London last month after a short business trip to New York.

A. H. Sommers, formerly with the New Jersey Car Spring & Rubber Co., Jersey City, New Jersey, has become associated with the Peerless Rubber Manufacturing Co., New York City, as its representative in Tennessee, Arkansas, Mississippi, Alabama, Kentucky and Missouri, with headquarters at Memphis, Tennessee.

Charles W. Harris has been appointed Western manager, with offices in the Hearst Building, San Francisco, California, for the Perfection Tire & Rubber Co., Chicago, Ill., and has resigned as district sales manager for the Seattle branch of the Kelly-Springfield Motor Truck Co. to re-enter the rubber trade, with which he was formerly connected for 18 years.

The Fisk Rubber Co., Chicopee Falls, Massachusetts, announces the appointment of William Jameson as power superintendent. Mr. Jameson has been with the company since its inception.

R. F. Valentine has been appointed sales manager of the Standard Tire and Rubber Co., Cleveland, Ohio.

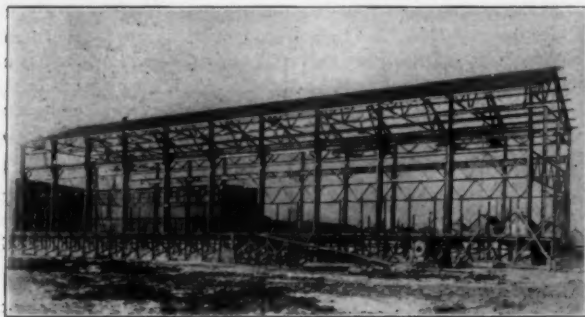
Roger Hardy, New York salesman for A. G. Spalding & Bros., has had a good deal of practical experience in the rubber business, from plantation to factory, a decided advantage in selling rubber sporting goods specialties.

ENLARGEMENT OF THE J. P. DEVINE CO.'S PLANT.

The J. P. Devine Co., Buffalo, New York, is constructing, as an addition to its plant, a steel and tile building 203 feet long, 60 feet wide and 60 feet high.

This extension will be devoted entirely to the manufacture of special apparatus for the chemical industry. This branch of the company's business has increased extensively during the past two years, and its apparatus has become well and favorably known.

Since undertaking the above extension the Devine company has also taken over the entire plant of the Pitts Agricultural



STEEL CONSTRUCTION OF J. P. DEVINE CO.'S NEW FACTORY.

Works of Buffalo, to do special casting work made necessary by the unprecedented activity of the chemical industry.

The Devine company is building plants for manufacturers for the production of various chemicals including all dyestuffs and higher intermediate colors, the making of which was confined to Germany prior to the present war. The development of this industry is most important not only because the attainment of the necessary standard in the production of colors will render this country independent of foreign sources of supply, but with suitable apparatus American workmen can nitrate with equal facility benzol, toluol or phenol for the manufacture of aniline oil, or high explosives.

**NEW INCORPORATIONS, WITH AUTHORIZED CAPITAL, ETC.,
1915 AND 1916.**

Akron Repair & Tire Co., The, January 12 (Ohio), \$5,000. P. J. Hooker, S. D. Brewster and A. Q. Ross. To deal in new and second-hand automobile tires and supplies, etc.

American Auto Accessories Co., December 24 (Delaware), \$5,000,000. Joseph F. Curtin, S. A. Anderson and Samuel B. Howard—all of 36 Nassau street, New York City. To manufacture and deal in pneumatic tubes, tires, etc.

American Tire Fabric Co., December 28 (Massachusetts), \$1,500,000. John L. McIver, 15 Ridge Road, Mattapan, Francis L. Auld, 403 Sudbury Building, Boston—both in Massachusetts, and Howard K. Wood, 36 Nassau street, New York City. Offices, Boston, Massachusetts, and New York City. To manufacture, buy and sell cotton yarns and other textile fabrics.

Badenhop Co., Inc., Robert, December 28 (New York), \$100,000. Robert Badenhop, 13 Jones street; Harold W. Holcombe, 147 Bostwick avenue, and Sloan Lamont, Jr., 115 Wayne street—all in Jersey City, New Jersey. Brokers in goods of any kind.

Cooper Metal Co., Inc., A., January 4 (New York), \$25,000. Abe Cooper, 815 South State street; John J. Hughes, 307 Clarendon street; Abraham Rubenstein, 374 West Onondaga street—all in Syracuse, New York. To deal in metals, rubber, etc.

De Mattia Bros., January 10 (New Jersey), \$100,000. Peter De Mattia and Barthold De Mattia—both of Clifton, and Frederick W. Gaston, Passaic—both in New Jersey. Office, River Road and Prescott avenue, Garfield, New Jersey. To manufac-

ture metal molds to be used for manufacturing rubber goods, etc.

Duralex Co., The, January 18 (New Jersey), \$250,000. Fred-eric E. Kip, Crestmount Road, and Herbert M. Lloyd, 24 Lloyd Road—both in Montclair, and Ira A. Kip, Jr., Ridgewood Road, South Orange—both in New Jersey. Office, 768 Frelinghuysen avenue, Newark, New Jersey. To manufacture and deal in rubber, rubber substitutes, textile fabrics, etc.

Excelsior Raincoat Co., Inc., January 26 (New York), \$10,000. Julius S. Levy and David N. Levy—both of 20 East 111th street, and Joseph Levy, 504 West 122nd street—both in New York City. Rubber apparel, etc.

Habirshaw Electric Cable Co., Inc., January 26 (New York), \$925,000. Edwin W. Moore, 17 Battery Place, Joseph W. Murphy, 40 Wall street—both in New York City, and James B. Gauraglia, Hoboken, New Jersey. To manufacture insulated wire, etc.

Jaffess, Inc., Leon, December 30 (New York), \$5,000. Leon Jaffess, 1837 Clinton avenue; Otto Pershitz, 673 East 176th street, and John M. Detjen, 61 Broadway—all in New York City. To manufacture tires, rims, auto parts, etc.

Johnson Tire Co., F. H., December 15 (Texas), \$10,000. Frank H. Johnson, William G. Bell, R. P. Tyler and Leonard D. Ormsby—all of Austin, Texas. Office, Austin, Texas. To purchase and sell goods, wares and merchandise, etc.

McClurg Tire Sales Co., Inc., January 4 (New York), \$10,000. James J. Fero and William Miller—both of 792 Seventh avenue, and Thomas F. McMahon, 1400 Broadway—all in New York City. Tires, tubes, auto accessories, etc.

Nesco Corporation, January 3 (New York), \$25,000. Rena A. Manes and Isabelle Manes—both of 7 Manhattan avenue, and Joseph P. Nolan, 25 Broad street—all in New York City. Rubber goods, steam packing, etc.

Northern Rubber Corporation, December 27 (New York), \$100,000. John E. Doane, 27 West Forty-third street, and James E. Taylor, 294 West Ninety-second street—both in New York City, and Knut Wideem, 1710 Caton avenue, Brooklyn, New York. Rubber and synthetic rubber manufacture.

Perfection Tire Sales Co. of West Virginia, December 1 (West Virginia), \$25,000. W. M. Faw and E. H. Faw—both of Albert; J. C. Faw, Elkins; R. D. Heironimus, Davis, and H. F. E. Hinebaugh, Thomas—all of West Virginia, and C. J. Simpson, Cumberland, Maryland. To manufacture tires.

Release Tire Valve Co., Inc., January 4 (New York), \$10,000. Norman A. Crumb, 622 Gurney Building; Erwin G. Nichols, 540 Gurney Building, and Abraham Edelstein, 622 Gurney Building—all in Syracuse, New York. To manufacture tires, valves, etc.

Rock Tire Manufacturing Co., Inc., The, January 18 (New York), \$500,000. George E. Whipple, 1845 Coney Island avenue; Thomas M. McGrath, 133 Rogers avenue—both in Brooklyn, New York, and Harry J. Wellebil, 171 Sixteenth avenue, Long Island City, New York. To manufacture automobile tires, etc.

Story, Browning & Trainer, Inc., December 30 (New York), \$75,000. Ernest D. Story and Elmer G. Story—both of 1328 Broadway, and J. N. Trainer, Jr., 381 Fourth avenue—both in New York City. Rubber tires, automobiles, etc.

Surinam Rubber & Wood Plantation Co., December 6 (Delaware), \$250,000. Joseph F. Curtin, H. O. Coughlan, and S. A. Anderson—all of 36 Nassau street, New York City. To deal in rubber, metals and minerals and products of all kinds, etc.

Tire Service Corporation, Inc., January 4 (New York), \$10,000. Rex C. Northwood, Jules E. Hut and Rose Greenwald—all of 1779 Broadway, New York City. Auto supplies, pneumatics tires, etc.

Tubeless Tire & Rubber Co., The, January 3 (Ohio), \$75,000. O. J. Hicks, G. B. Helmuth, J. Lemmon, D. R. Messner and W. R. Price. Office, Millersburg, Ohio.

Universal Raincoat Co., Inc., January 10 (New York), \$3,000. Marcus Berman and Louis Berman—both of 136 East 112th street, and Max Herman, 414 East Tenth street—all in New York City. To manufacture rubber clothing, etc.

THE MANAGER OF THE CRAVENETTE CO.

THE trade generally is familiar with the term cravenette, but all are not so well acquainted with the fact that the improved processes by which textiles, felt goods and even leathers are made water-repellent or waterproof are to a large extent due to one man, Herbert P. Pearson, the subject of this sketch.



H. P. PEARSON

Mr. Pearson was born in Manchester, England, in 1877, and received his education in that city, graduating from a four years' course at Manchester University, with degree of Master of Science in chemistry. Then he spent a year in Germany, studying dyeing, and at a mill in Alsace, familiarizing himself with spinning, weaving and finishing.

Returning to England he associated himself as chemist to the Bradford Dyers' Association, Limited. This position he occupied for seven years, spent largely in the works, where he gained unique practical experience in all the processes through which textile piece goods pass after weaving.

Then he went to London as consulting chemist, specializing in bleaching and waterproofing textiles, and as manager of Pearson Patents, Ltd., and so remained until, in 1910, the Cravenette Co. U. S. A., secured his services in establishing in this country processes of his invention for waterproofing straw hats. The next year he again visited this country to start a process for damp-proofing shoes, which he had been investigating in England.

In 1912, at the invitation of the late Langdon Geer, Mr. Pearson entered into the management of the business of the Cravenette Company, and since Mr. Geer's death in June, 1915, he became managing director of the company.

The Cravenette Company has recently broadened its policy and added to its lines of output. In September a new plant was established, devoted solely to the cravenette finishing of silk goods, to render them spot-proof. Recently this company has cravenette finished some rubberized cotton and silk goods, making the surface repellent, so that water does not cling to, or spot the cloth. A garment thus treated needs only to be shaken to become quite dry. This gives some indication of the extension of the field of endeavor of this company, an expansion due almost solely to the study and experimentation of Herbert P. Pearson.

TRADE NOTES.

The yarn department of J. Spencer Turner Co., 86 Worth street, New York City, has been consolidated with the business of C. H. & R. L. Stevens, Inc. Hereafter cotton yarns of all counts and descriptions will be supplied to the trade under the personal direction of C. H. and R. L. Stevens.

The Passaic Cotton Mills, Passaic, New Jersey, has purchased from the New England Cotton Yarn Co., one of the large spinning plants at New Bedford, Massachusetts, known as the Rotch mill. It has been entirely renewed to the extent of 55,000 spindles. Taylor, Armitage & Co., 346 Broadway, New York, selling agents for the Passaic Cotton Mills, are now in a position to protect their contracts.

If political conditions in Mexico permit, the Intercontinental Rubber Co. plans to start operations at its plant at Torreon, Mexico, this month, on a scale considerably above that possible at any time since 1913.

The Atlantic Transport Line, 9-11 Broadway, New York City, the well-known steamship company, has added four fast express

steamers flying the American flag to its trans-Atlantic service; an obvious advantage to both rubber importers and manufacturers.

The Continental Rubber Works, Erie, Pennsylvania, has just completed a new machine shop of steel and concrete, dimensions of which are 75 x 110 feet. It is equipped with an electric crane running the full length of the building. The company has also added to the plant a new factory building, 75 x 226 feet, four stories high, of steel and concrete construction, to be exclusively devoted to the production of automobile, motorcycle and bicycle tires. The company employs about 800 workmen.

At the second Annual Industrial Safety Exposition at Cleveland, Ohio, January 22 to 29, The B. F. Goodrich Co. made one of the largest displays, showing safety and sanitation methods in use at its Akron factory. These included a gear guard and safety switch box, an anti-scalding wash basin, a non-slipping ladder and a sanitary drinking fountain. A replica in miniature of the medical dispensary of the Goodrich plant was also shown.

The Mechanical Rubber Co., Chicago, Illinois, has opened an office in Detroit, Michigan, which will be especially devoted to the automobile lines of the company, and is in charge of W. G. Lindsey.

The Batavia Rubber Co., with factory at Batavia, New York, and general sales and financial offices in New York City, has recently increased its capital in order to extend its development. Charles M. Marvin, formerly of Blake Brothers & Co., has been elected treasurer of the company, and George W. Hodges, of Remick, Hodges & Co., has been added to the board of directors, both of New York City.

The Fisk Rubber Co., Chicopee Falls, Massachusetts, announces that a readjustment of wages and a change in working hours have been made which affect all departments. Under the new schedule the working hours have been decreased from 55 to 50 hours a week, and overtime on week days will be paid for as time and a half, and on Sundays as double time. New piece work schedules for machine operators have also been adopted.

A fire occurred recently in the cloth drying room of the L. Candee & Co., New Haven, Connecticut, the damage being less than \$3,000.

Since the middle of January the B. & R. Rubber Co., North Brookfield, Massachusetts, has been obliged to resort to burning cord wood for steaming purposes owing to irregular receipts of coal via Albany. From 25 to 30 cords of wood have been required daily.

A serious fire is reported as having destroyed the shops of the Albany Tire Repairing Co., Albany, New York, on January 27.

The B. F. Goodrich Co., Akron, Ohio, has brought action against the Norwalk Tire & Rubber Co., Norwalk, Connecticut, manufacturer of a tire with white sides and a black tread in which the letter "N" is worked. The plaintiff claims that the trade design and color scheme is a close imitation of a tire it has been marketing, that the public is apt to be deceived by the new product, and that its business has suffered on account of this.

The Miner Rubber Co., Limited, Granby, Canada, has opened a wholesale warehouse in charge of Angus W. Douglas at Edmonton, Alberta, where a full line of rubber footwear will be carried.

The Pierce Co., East Rochester, New York, claims to have increased its output of "Vorite" 30 per cent. in 1915, and has made substantial additions to its plant.

The Batavia Rubber Co., Batavia, New York, is putting out a red tread tire.

SMOKEHOUSE TRADE NOTES.

During the holiday season the Chicago Rubber Clothing Co., Racine, Wisconsin, used for its correspondence its regular lithographed letterhead, in the lower left-hand corner of which was specially printed a green and red holly wreath inscribed with appropriate season's greetings.

The Faultless Rubber Co., Ashland, Ohio, has erected a new addition of modern fireproof construction to its factory which adds 30,000 square feet to the 135,000 square feet of floor space now in use. In the mill room, which will occupy the ground floor of the new structure, the mills and calenders will rest on concrete foundations extending to bed rock. The second floor will be devoted to various manufacturing departments. All machinery will be driven by electricity made in the factory from steam generated in 250 horse-power boilers by local natural gas.

The plant at Lowell, Massachusetts, formerly occupied by the Patterson Rubber Co., has been taken over by the R. B. Phillips Co., manufacturer of munitions.

The Okonite Co., New York City, has established at its factory a research department with J. P. Millwood in charge. Mr. Millwood was head of the Chemical Research Department of the United States Navy Yard at New York for 20 years, and is held in high esteem as a rubber chemist. Dr. Comfort A. Adams, professor of electrical engineering at Harvard University, is retained as consulting engineer of the new department.

Philip De Ronde, president of the Oriental Navigation Co., announces the removal of the company's offices to Room 1134, 17 Battery place, New York City.

A remarkable record of efficiency was made recently by the Quebec division of the Canadian Consolidated Rubber Co., Limited, Montreal, Canada, when 55,100 pairs of hip rubber boots required by the British army in Flanders, were finished in 45 days. These boots had special features, that added considerably to the work of making such as an extra heavy skirt and much wider mouth than the standard style and special straps at ankle and knee, with automatic buckles. A supplementary order has since been received by the company.

The rubber overflow trimmer made by Arthur Jackson Wills, North Brookfield, Massachusetts, has evidently qualified with the rubber trade. It is reported that 33 of these machines have recently been installed in the finishing room of one of the largest manufacturers of mechanical goods in the country.

In addition to the storage warehouse recently completed for the Electric Hose & Rubber Co., Wilmington, Delaware, on the eastern end of its mill, a second story, 30 x 225 feet, is being erected over the braiding room on the western side for the purpose of installing new braiding machines. Additional machinery is also being installed to take care of the demand for molded hose, which, when in place, will increase the daily capacity to about 125,000 feet.

At the thirteenth annual meeting of the Electrical Contractors' Association of Wisconsin, held in Milwaukee, January 17, 18 and 19, Henry A. Morss, vice-president of the Simplex Wire & Cable Co., read a paper on "The Manufacture of Insulated Wires and Cables," which was illustrated with motion-pictures and lantern slides.

In the announcement of promotions and changes in office and factory staffs of the Standard Underground Cable Co.'s plant at Perth Amboy, New Jersey, it is noted that H. W. Fisher continues as chief electrical engineer of the company, and in addition becomes manager of the lead-cable works and rubber wire and cable factories. Tracy D. Waring will be assistant manager of the lead-cable works and of the rubber-wire factory, and Albert C. Meyers will be superintendent of the rubber-wire factory.

THE NEW "USCO" TIRE.

The successful combining of rubber and fabric has never been a simple proposition; but in the new "Usco" tire it is claimed a practically perfect union has been effected and that the plies of fabric are so unified by the rubber that they cannot possibly separate.

This new tire, which has been subjected to the most severe tests, is adapted for use on small or large cars. The very attractive tread design is said to offer protection against skidding. The letters "U," with their curves and angles, grip and cling to the slippery roads. From the illustration it may be seen that the tread rubber is of unusual thickness, which feature adds to endurance and mileage. The company will also offer to the trade this season a new high grade cord tire under the name of "Royal Cord." [United States Tire Co., New York.]



THE MATTSON HAND-MADE TIRE.

The Mattson Rubber Co., one of the oldest rubber manufacturing companies in the United States, began chiefly as a druggists' sundries concern. From time to time it has, however, added other lines. One of its specialties today is the Mattson hand-made tire. The illustration shows the depressed type of non-skid used. This tire adds one more to the large list of distinctive American motor tires. [Mattson Rubber Co., Lodi, New Jersey.]



THE SIMMONS TIRE.

A new tire known as the "Simmons" promises to interest owners and manufacturers of auto trucks.

As will be seen in the accompanying illustration, this tire is made up of cylindrical rubber blocks, held in place by flanges and by rough-faced steel forgings that are tightly bolted through the rim of the wheel. After the rubber cylinders have shown wear, the bolts holding the forgings are loosened and the rubber blocks are turned, thus presenting a new wearing surface to the tread.

It is claimed that the rubber blocks can be turned at least six times and that each time the tire will be practically as good as new, that skidding is overcome and that better traction is obtained than with a dual tire. Each tire is guaranteed for 30,000 miles. [Modern Railway Appliances Co., Albany, New York.]



SMALL TIRES IN THE MAJORITY.

The tendency toward lighter weights in automobile construction is reflected in the reduced size of tires. The "Automobile" finds that, taking the average for all cars, the nearest regular tire size corresponding to this average figure is now 33 x 4 1/2 inches. In 1910 and 1911 the average size was 34 x 4 inches. This increased until 1914, when the average was raised to 35 x 4 1/2 inches. Since then it has declined.

ASHCROFT NOW A NEW YORKER.

RALPH W. ASHCROFT, who for three years has had charge of the publicity, as well as other matters, for the Canadian Consolidated Rubber Co., Limited, Montreal, Canada, has been appointed advertising manager of the "United States Rubber System," with headquarters at 1790 Broadway, New



R. W. ASHCROFT.

York City, where, in conjunction with his other duties, he will continue to supervise the Canadian publicity.

Mr. Ashcroft was born in Cheshire, England, some 40 years ago, and after graduating from Waterloo College came to New York City to act as private secretary to a railway president. After five years of this work, he entered commercial journalism. His connection with the rubber industry

was as manager of a New York export house and he is credited with having shipped the first American automobile tires to Europe, a set of which was put on King Edward VII's car.

Mr. Ashcroft has traveled extensively, and is a member of the Circumnavigators' Club, the only organization, it is said, of which both Taft and Bryan are members. He has visited the Far East, including India, Burma, Ceylon, Sumatra, Java and the Straits Settlements.

THE NATHAN TIRE COVER PATENT ADJUDICATED INVALID.

The Allen Auto Specialty Company, New York City, has lost its suit against E. G. Baker for infringement of the Nathan tire cover, patent No. 799,622. This suit was first brought into the courts in 1882, as recorded in the November, 1882, issue of THE INDIA RUBBER WORLD. Since that time the lower court had held the patent to be valid and infringed by E. G. Baker, who appealed, and the United States Circuit Court has now reversed the decision of the lower court in his favor.

"VULC-TITE" BLOW-OUT PATCH.

An inside locking blow-out patch that is adjustable to all sizes of casings is called the "Vulc-Tite." The extension flap, with a wide strip of vulcanizing rubber, is shaped to fold under the opposite side of the patch, which is cement coated. The patch seats itself and the pressure of the tube when inflated automatically vulcanizes the patch to itself. According to the claims made, there is no possibility of this patch bulging or spreading, as fastened to itself in this manner it forms a complete cylinder around the tube and holds the pressure as certainly as a casing clutched at the beads. [General Tire & Rubber Co., Akron, Ohio.]

Prices for all classes of rubber goods remain in the unsettled condition that of late has characterized these markets, although increases have been made in certain lines.

UNITED STATES TIRE CO. PROMOTIONS.

Samuel S. Poor, manager of the Philadelphia branch of the United States Tire Co., New York City, has been promoted to the position of district manager, including the centers of Philadelphia, Wilkes-Barre, Baltimore, Washington and Richmond.

Garfield List, formerly manager of the solid tire department, succeeds Mr. Poor as Philadelphia resident manager.

Charles C. Gehring, for four years resident manager of the Pittsburgh branch, has been made district manager, with supervision over the local branch, and also of the Buffalo and Wheeling branches.

E. H. Kidder, formerly manager of the Boston branch has been appointed New England manager, having charge of the Boston, Providence, Worcester, Bangor, Portland and Manchester offices with headquarters at Boston. J. Toomey will manage the Boston branch, Howard E. Crocker having been placed in charge of the Providence branch formerly managed by Mr. Toomey.

O. S. Johnson succeeds H. H. Hubbard as manager of the St. Louis branch, Mr. Hubbard being transferred to the home office of the company.

FIRESTONE APPOINTS DISTRICT MANAGERS.

The Firestone Tire & Rubber Co., Akron, Ohio, announces the appointment of three district managers with headquarters at the home office but to work with the sales organization in the field.

Dan C. Swander, formerly branch manager at New York City, will have charge of the eastern district. He will be succeeded in New York by C. D. Studebaker who becomes branch manager. E. W. BeSaw, formerly Des Moines branch manager, will look after the western district, and G. A. Spohr, former salesman, succeeds Mr. BeSaw as Des Moines manager. N. B. Burwell of the home office sales department will take care of the southern district.



E. W. BESAW.

D. SWANDER.

N. B. BURWELL.

In commenting on the new appointments R. J. Firestone, sales manager of the company, said: "These district managers will serve as an additional connecting link between the field organization and the home office. Our organization is growing so rapidly that we need more points of contact. With our output jumping 60 per cent. this year so that by early spring we will be turning out 12,000 pneumatic tires per day, our district managers will be able to render valuable and efficient service."

AUTOMOBILE WHEEL GAGE.

A patent factor in reducing the mileage of automobile tires is the tendency of the front wheels to get out of alignment. Wheels that do not run parallel have a side-slip that grinds down the tread of the tires even when they are being used under otherwise favorable conditions. As the wear is smooth, it often escapes the attention of the motorist, but it is nevertheless very important. A simple gage has recently been placed on the market, consisting of a light steel beam with diagonally braced uprights and an adjusting thumb screw, which can be used to quickly detect non-parallelism of automobile wheels. [Murray Fahnestock, Pittsburgh, Pennsylvania.]

NEW BUILDINGS OF THE FISK RUBBER CO.

THE three new buildings of the Fisk Rubber Co., Chicopee Falls, Massachusetts, mention of which was made in the last issue of THE INDIA RUBBER WORLD, are illustrated in the photographs reproduced herewith. These buildings all lie on the tract of land situated between Grove street and the railroad and bring the total number of buildings comprising the plant up to 20.

The administration building, of impressive appearance, is built of stone and tapestry brick and contains 70,000 square feet of floor space.

The five stories and basement of the new mill building have 388,800 square feet of floor space. This is said to be one of the best lighted mill buildings in New England. More than 90

continuing as assistant superintendent. E. A. Krannich, who is superintendent of the Columbia Tire & Rubber Co., Columbiana, Ohio, which company is composed of the same stockholders and directors as the Mansfield company, will have charge of the "compounds" of both organizations. Mr. Krannich will be assisted at the Mansfield plant by A. J. Bethea, chemist.

The Universal Rim Co., Chicago, Illinois, has removed from 1301 to 1502 Michigan avenue, increasing its floor space about five times that previously used.

We are informed by the Akron Tire Co., Inc., Philadelphia, Pennsylvania, that the decision concerning the use of this name by a New York company operating in Pennsylvania, recorded in the December, 1915, issue of THE INDIA RUBBER WORLD, has been reversed. At a final proceeding before Judges Shoemaker, Pat-



NEW BUILDINGS OF THE FISK RUBBER CO.

per cent of its exterior surface is made up of windows fitted with prism glass, and four fire towers afford an unusual safeguard for the employees. The storehouse, which is also equipped with fire towers, sprinklers and prism glass windows, has half of the floor space of the new mill building. Tunnels connect it with the adjacent buildings, and a spur track on the south side will facilitate the handling of freight.

TRADE NOTES.

A new building is being erected for the Detroit, Michigan, branch of the Firestone Tire & Rubber Co., Akron, Ohio. It is to be a four-story structure, 181 x 300 feet, located at Woodward and Canfield avenues, and is expected to cost between \$30,000 and \$50,000.

The floor space of the Omaha, Nebraska, branch of the Goodyear Tire & Rubber Co., Akron, Ohio, is being increased to about 14,000 square feet. Last spring, when the branch first moved into its present quarters, it occupied about 5,000 square feet of floor space. A credit and a mechanical rubber goods department have been established.

The Norwalk Tire & Rubber Co., Norwalk, Connecticut, has purchased the land and buildings of the Norwalk Woolen Mills Co. at Winnipauk, a suburb of Norwalk, and reports selling its unissued preferred stock, amounting to \$300,000, thereby securing a total working capital of \$500,000.

The Goodyear Tire & Rubber Co. of Canada, Limited, Toronto, Canada, has recently purchased 27 acres of land in New Toronto, about seven and one-half miles from the center of the city of Toronto. The company plans to build a new plant on this property for the manufacture of tires, continuing the plant now in operation at Toronto for manufacturing mechanical goods.

Several changes have been made in the factory management of the Mansfield Tire & Rubber Co., Mansfield, Ohio, owing to the resignation of George McConnell, formerly superintendent. Garth A. Dodge, a man of experience in the tire business, who has acted as mechanical engineer at the plant for the past eighteen months, had been appointed superintendent, George Whalon con-

terson and Bregy, the New York company was restrained from using the name of the Philadelphia company for advertising or business purposes in the State of Pennsylvania.

The Fisk Rubber Co. has opened a branch at 1313 New York avenue N. W., Washington, District of Columbia.

The Chester Rubber Tire & Tube Co., Chester, West Virginia, will receive bids in March for a plant to cost \$720,000. Three structures will be included, one 50 x 170 feet, another 40 x 75 feet, and the third 42 x 75 feet.

The Tubeless Tire & Rubber Co., Millersburg, Ohio, the notice of whose incorporation appears elsewhere in this issue, will make the King tire, which is claimed to be punctureless and which will be sold with a guarantee of 8,000 miles. The company expects to have employment for 100 men at the start, and an output of at least 100 tires a day. The officers are as follows: W. R. Price, president; O. J. Hicks and G. B. Helmuth, vice-presidents; G. A. Jordan, secretary and treasurer; C. T. Rood, assistant secretary; John Lemmon, assistant treasurer.

THE STANDARD FOUR IS MANUFACTURING TIRES.

The Standard Four Tire Co., Keokuk, Iowa, whose incorporation was mentioned in the October, 1915, issue of THE INDIA RUBBER WORLD, began operations on January 3. The company has erected a modern factory building which has been equipped with the latest tire-making machinery. It purchased its mill equipment from the Birmingham Iron Foundry, Derby, Connecticut, and its mold equipment and vulcanizers from the Adamson Machine Co., Akron, Ohio.

The officers are as follows: J. R. Beaver, president; C. F. McFarland, vice president; A. L. Higbee, secretary; E. A. French, treasurer, and W. J. Richards, formerly with the Jonesboro Tire & Rubber Co., Jonesboro, Indiana, general manager. The other directors are H. S. Charles and C. M. Rich. R. H. Sotherland, formerly factory manager of the Mansfield Tire & Rubber Co., Mansfield, Ohio, is superintendent, and has associated with him a number of practical men from Akron, who have charge of the different departments in the new plant.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

BUSINESS continues good in nearly all lines of rubber manufacture. The clothing men are not taking many orders just now, but their factories are running full time on orders and some overtime. Mechanicals are in pretty good demand, but really are busier than usual at this season of the year.

Footwear people have more business on their books than ever before at this particular season. The call for tennis goods has been unusually good, and while the withdrawal of prices on the 21st had a tendency to hold back orders, the manufacturers are confident of a big season's business. Drug sundries are being called for. Tires are being made in many cases to full capacity of the factories, and the advance of 10 per cent seems to have stimulated rather than retarded business.

The United States Rubber Co. will remove its Boston offices about March 1. It has leased the entire five-story building, 130 Essex street, corner of Columbia street, recently vacated by the Singer Manufacturing Co. Extensive alterations are in progress at this writing, which will greatly alter and improve the front of the building. The interior is being thoroughly modernized and arranged to house the footwear department on the first floor, while the four upper stories will be occupied by the clothing department in charge of N. Lincoln Greene.

The building is so close to the present offices of the footwear department and which until recently was the salesroom of the American Rubber Co.'s clothing sales department, that old customers will easily find it, while the patrons of the Stoughton Rubber Co. find it right in the heart of the ready-made clothing section and much more central than the old headquarters of that company on Summer street extension.

The contemplated consolidation of the Stoughton Rubber Co. with the clothing department of the American Rubber Co. has been consummated under the name of the American Rubber Co. The officers are: Lester Leland, president; Ira F. Burnham and N. Lincoln Greene, vice-presidents; H. H. Nance, treasurer; Homer E. Sawyer, general manager. N. Lincoln Greene will be manager of the clothing department, E. H. Hicks serving as assistant manager.

The Stoughton Rubber Co. has for years been the New England agents for the New York Belting & Packing Co. Now the latter company has decided to operate a branch store at 65 Pearl street, Boston, similar to the branches in several other leading cities. Fred J. Pickard has been appointed manager, and is now overseeing the changes to fit the new premises for the incoming stock. Mr. Pickard started with the Stoughton Rubber Co. 20 years ago and for 16 years has sold mechanicals in this territory.

The dedication of the new building added to the plant of the Apsley Rubber Co. at Hudson took place New Year's eve, when nearly 2,000 employees and their families were entertained royally. This new factory building of 40 x 192 feet was given over for the occasion. Each floor was profusely decorated with bunting, evergreens and electric colored lights. A floor each was used for games, a musical and dramatic entertainment, refreshments, and a grand ballroom. Music was supplied by a band, an orchestra and a concert company. In every way the arrangements were carried out in the liberal manner which has always characterized Mr. Apsley's entertainments for his employees. The disappointment of the evening was that Mr. Apsley was unable to participate, as he was confined to his room at the Waldorf-Astoria, New York, where he has been ill with the grip for over a month. At present writing, however, he has so far recovered that he is expected to return to Hudson almost any day.

We shall soon have, in Massachusetts Bay, the largest crude oil motor yacht yet constructed in this country. This yacht is being built for Arthur H. Marks, vice-president of The B. F. Goodrich Co., Akron, O., and will measure 151 feet on the water line, 22 feet beam, and 7.6 feet draft. It is of steel construction and will have ten spacious staterooms for the owner and guests, besides ample accommodations for the crew. On the deck are located the dining, chart, music and smoking rooms. The motors are designed to develop 750 H. P. and the fuel tank capacity is sufficient for a trip across the Atlantic and return.

Mr. Marks is a yachting enthusiast and a member of the Eastern Yacht Club.

J. H. Learned, for the last 14 years sales manager of the Revere Rubber Co., will hereafter confine his efforts entirely to a few of the specialties of the company, turning over the general sales management to Walter B. Rigdon, who comes here from the San Francisco office. Previous to his going to the Pacific coast Mr. Rigdon was in the Pittsburgh office of the company.

The Revere Rubber Co., which is now occupying a portion of the office floor of the United States Rubber Co., will remove about March 1 to larger quarters.

Richard H. Rice, General Electric Co., Lynn, is president of the Associated Industries of Massachusetts, an organization recently formed for the purpose of studying proposed legislation affecting the industrial prosperity of the state and promoting beneficial measures. William H. Gleason, Revere Rubber Co., Chelsea, is president of the executive council, and Harry G. Fisk, Fisk Rubber Co., Chicopee Falls, and George E. Hall, Boston Woven Hose & Rubber Co., Cambridge, are members of the executive committee.

The new year brought substantial recognition to some two hundred employees of the Boston Woven Hose & Rubber Co., who had served the company for from 10 to 35 years. These workers assembled in the Cambridge works on New Year's afternoon and received gold coin to the total value of several thousand dollars, that was distributed according to length of service to those on the honor list. Addresses were made by J. W. Fellows, factory manager; Henry B. Sprague, treasurer, and George E. Hall, vice-president and general manager.

The annual election of officers of the Boston Woven Hose & Rubber Co. Mutual Benefit Association was held on December 13 with the following results: W. A. Briggs, president; W. H. Nolan, vice-president; George A. Mather, financial secretary; William Burgess, treasurer; Joseph I. Taylor, recording secretary; William G. McCarthy, Edward Butcher, F. R. Rowe, Thomas Gormley, J. C. Long, Charles Laverty and Jack Kelley, directors. The organization was started but little more than a year ago, has over 600 members, no obligations, and over \$1,000 in the treasury.

In recognition of 25 years of service with the Boston Woven Hose & Rubber Co., a dinner was recently tendered to John E. Laffey, a department head, by officers of the company, department heads and other business friends. He was presented with a gold watch and chain as a token of esteem from his associates.

In the United States District Court Judge Morton has appointed John E. Eaton and Louis A. Frothingham receivers of the Columbia Rubber Co., upon a petition filed by Stoneman, Gould & Stoneman. The bonds were fixed at \$9,500. Mr. Eaton was suggested by David Stoneman as a result of agreement of attorneys representing various creditors. Mr. Frothingham was the choice of Judge Morton.

The Peerless Rubber Co., which has been represented in Boston by the Enterprise Rubber Co., and later by the United States Rubber Co., will open its own branch store in this city

about the middle of February. It will also take the agency for New England of the Mechanical Rubber Co., of Cleveland. R. J. Barker, formerly with the Enterprise and United States companies, will be manager of the new branch.

W. E. Barker, manager of sales of the United States Rubber Co., addressed the members of the National Association of Shoe Wholesalers, at its luncheon incident to its annual meeting and election, at the Copley Plaza Hotel on Friday, January 14.

Francis H. Appleton, of the rubber reclaiming firm bearing his name, will spend the month of February at Miami, Florida.

Mr. Alexander, formerly in the efficiency department of the Tyer Rubber Co., Andover, Massachusetts, has resigned from that position to accept a similar one with the Apsley Rubber Co., Hudson, Massachusetts, where he will make a thorough investigation into costs of production, methods of manufacture, and plan for greater efficiency throughout the factory.

The Tyer Rubber Co. reports a steadily increasing demand for its new soling material, "Leatherex." One particularly striking advertisement shows a picture of a sportsman on skis "leaping into popularity," the skis being represented as exaggerated specimens of "Leatherex" soles, with the trade-mark on the bottom.

Howard B. Clifford, who for several years was in the Boston office of the United States Rubber Co., was married on Christmas day at St. Paul's church in Malden to Miss Iola G. Smith. He has been transferred to the Minneapolis, Minnesota, branch of the company.

The Kelly-Springfield Tire Co. is now located in its new branch and service station at 698 Beacon street.

Edward F. Bragg, of the Alfred Hale Rubber Co., who has been confined to his home by a long period of illness, is said to contemplate retiring from the treasurership of that company in the interest of his health.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE rubber factories throughout Rhode Island are so busy that the usual annual January vacations were passed and present indications are that it will be some time before any of the plants will be closed down excepting for necessary overhauling and repairing. One of the greatest drawbacks that the concerns are experiencing is the decided shortage of help which is becoming so serious that some superintendents are considering what they are going to do, to keep pace with the demanded production. There is an exceedingly heavy call for all kinds of rubber goods that is constantly increasing.

Business has increased to such an extent at the several manufacturing plants at West Barrington, including the International Rubber Co., that enlarged railroad facilities have become necessary. Recently the New York, New Haven & Hartford Railroad, in response to the request of these concerns, lengthened sidings at the West Barrington freight yard several hundred feet, to admit of improved loading and unloading facilities. Now the increased output makes further extensions obligatory.

The Revere Rubber Co. has recently completed the installation of a Boland automatic sand blast at its plant on Valley street, Providence, by H. J. Astle & Co. This piece of machinery was specially designed for the Revere company and it is to be used for sand blasting steel automobile truck rims, making them perfectly smooth so as not to cut the rubber tires. The new machine, which removes the rust and imperfections from the rims more quickly than was formerly done, is double, each side being fitted with a spool to take the different sizes of rims. The rims

are revolved in order that every portion of the face may come into contact with the blowing sand, which operation is done entirely within the machine.

Although this sand blast has been in operation but a short time, the Dunlop Rubber Co., Limited, of Birmingham, England, has placed orders for a number of similar machines, the first shipment of which was made about the middle of the past month. Other shipments are to be made later to several of the Dunlop factories throughout Europe. These sand blast machines are 14 feet long by 4 feet wide and 8 feet high. A Boland four-cylinder blower is used to supply the blast to each machine.

The factory of the National India Rubber Co., at Bristol, did not have the usual January shut-down this year on account of the pressure of business. The plant was recently closed from Friday afternoon until the following Monday morning, during which necessary repairs were made to machinery. During the past few weeks considerable new machinery has been installed, including stitching, eyelet and stenciling machines.

Several hours are taken up each night in making up freight trains of rubber goods at the yards of the New York, New Haven & Hartford Railroad.

Colonel Samuel P. Colt, president of the United States Rubber Co., who reached his sixty-fourth birthday on January 10, entertained a few friends at his home, Linden place, Bristol, that evening in honor of the event.

Theodore Wood, for the past two years agent of the American Yarn Co., at Pawtucket, has removed to Akron, Ohio, where he has accepted a position as head of the textile department of The B. F. Goodrich Co. Before coming to Pawtucket he was an official at the Dartmouth Mills, New Bedford, Massachusetts.

Jefferson F. Galvin, for several years foreman of the calendering department at the National India Rubber Co., Bristol, but now engaged in a responsible position with a rubber concern in Watertown, Massachusetts, is at his old home in Bristol, convalescing from a serious illness.

The Hill & Lacrosse Co., manufacturer of elastic webbing materials, Howard, because of increasing orders, is erecting a one-story addition to its plant. The new structure is 83 feet in length by 27 feet wide.

The Co-operative Auto Supply Co. has removed from 134 to 166 Washington street, corner of Empire street, Providence, where they are specializing in Racine tires.

The Republic Tire agency, Frank Glover, proprietor, formerly located on Washington street, has moved to larger quarters in the new building, 165 Empire street, Providence.

A contract has been given for a lounging and rest room to be fitted up at the plant of the Phillips Insulated Wire Co., Pawtucket.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

TIRE and accessory manufacturers are deeply interested in the automobile show to be held in the Trenton armory some time in the month of February. Arrangements will be made with automobile dealers in a number of surrounding counties to co-operate in making the show a success. R. V. Kuser is chairman of the committee in charge of the preparations. In this connection it may be interesting to state that there are more than 90,000 motor cars in use in New Jersey, of which about 79,000 are passenger cars and about 11,000 are trucks.

Work has been begun on a three-story tire-making wing for the Ajax Rubber Co., Inc., which will be 250 x 350 feet in size, with foundations built to hold additional stories. Rapid progress is being made on the additions to the vulcanizing works. A new

power house, with stacks, boilers, engines and dynamo units is to be erected, and equipment for the new rubber mill is now being built. By early spring it is expected that all the buildings will be completed, thus increasing the daily capacity to 5,000 tires.

The new inner tube department of the Essex Rubber Co., which has placed on the market three styles of automobile inner tubes, blue, red and gray, is said to be meeting with much success, as the demand for the goods is steadily growing.

The Eagle Rubber Cement Co. has been acquired by the Essex, and the cement is now made at the Essex plant. Adolph Biller, former head of the Eagle company, is directing the manufacturing of this cement at the Essex factory. The cement is one item in the line of automobile accessories which the company will push this season.

The Mercer Rubber Co. is erecting a large water tank to supply its recently installed automatic sprinkler system. This tank, which will be 125 feet high, will hold 80,000 gallons of water. About \$15,000 is being expended in installing the system.

The automatic sprinkler system of the Vulcanized Rubber Co., at Morrisville, probably saved that plant from a bad fire recently. The blaze started from an unknown cause in the carpenter shop, and the prompt operation of the sprinklers extinguished it before anyone learned there had been a fire.

The Lake Ruth Manufacturing Co., at Spotswood, making a line of druggists' sundries, lost its plant by fire January 5. Crossed electric light wires are said to have started the blaze. Dr. J. G. Donelsbeck, of Trenton, is one of the principal stockholders in the company, which, it is said, was rushed with orders. No announcement as to the rebuilding of the plant has yet been made.

The Mecca Tire Co. has begun operations in its newly acquired plant on Mulberry street. Goods are now being turned out in a limited way, but the installation of additional machinery will shortly enable the firm to greatly increase its output.

The Thermoid Rubber Co. began night work this week. The plant is unusually rushed with orders, and prospects for the coming season are considered most encouraging.

During the last month, since the evangelist arrived in Trenton, practically all of the rubber factories have had "Billy" Sunday services at the noon hour, which has generally been extended for the purpose.

The claim of Mrs. T. A. Foley for damages under the New Jersey Workmen's Compensation Law for the death of her husband, an employe of the Home Rubber Co., who lost his life on the "Lusitania" while on his way to the London office of the company, was dismissed by Judge Marshall in the Mercer county court. Mrs. Foley is making a further effort to obtain damages from the company, and the matter will probably be tried at the February term of the Supreme Court.

General C. Edward Murray, of the Empire Rubber & Tire Co., has been named by the Trenton Chamber of Commerce as a member of a special committee to consider the proposed establishment of a commission to work in conjunction with the permanent tariff commission.

Clifford H. Oakley, president of the Essex Rubber Co., is enjoying a vacation in Cuba.

Alfred Whitehead, secretary of the Whitehead Bros. Rubber Co., has been chosen a director of the Trenton Banking Co., to

take the place of the late William S. Hancock, who, it will be recalled, was also identified with the rubber business.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

AKRON is suffering from a severe case of "growing pains." The city limits have been extended. Real estate activity is unprecedented. Building cannot keep pace with the demand for houses occasioned by the arrival of factory workmen and their families anxious to share in the opportunities afforded by the mammoth industrial expansion now in progress.

It is reported that the Firestone Tire & Rubber Co. is interested in the half-million dollar Coventry Land & Improvement Co. recently incorporated, Robert F. Todd and John F. Rowe, of the general offices of the Firestone company being among the incorporators. It is expected that the two tracts of land owned by the rubber company, which would provide building lots for 600 homes, will be developed in a manner similar to the plan of Goodyear Heights, for the benefit of the Firestone employees.

The rim plant of the Firestone company is being enlarged by the addition of a building 50 x 100 feet in size, and some remarkable figures are presented with reference to the company's business in demountable rims. During December 4,000,000 pounds of special steel were used for rims, supplied on contracts with 79 car manufacturers. It is stated that present orders and production facilities assure an output of 1,000,000 demountable rims during 1916.

The books of The B. F. Goodrich Co. have just been closed for the purpose of compiling the full annual report for the year 1915. The results are as follows, subject only to the verification of public accountants and auditors:

After making proper provision for maintenance charges, depreciation, bad debts, and other items which it was deemed wise to take out of the year's earnings, the net profits for the period amount to approximately \$12,200,000.

This amount, added to the surplus carried over as of December 31, 1914, of \$3,100,000, shows undivided profits of approximately \$10,500,000 after deducting the four quarterly dividends of 1¼ per cent. on preferred stock outstanding, together with a provision of \$1,100,000 for the redemption of preferred stock, and a further amount of \$1,700,000 set aside for various reserves which will be shown in detail in the annual report.

The company's financial position has again improved during the past year, as the amount of quick assets over current liabilities shows a gain of approximately \$8,100,000.

The current assets amount to approximately \$31,250,000, and the current liabilities to \$4,200,000.

At the regular quarterly meeting of the directors held on January 26 a dividend of 3½ per cent. was declared on the preferred stock, payable 1¼ per cent. April 1 and 1¼ per cent. July 1. A quarterly dividend of 1 per cent. was declared on the common stock, payable February 15, 1916.

The directors voted to retire 7,000 shares of preferred stock prior to July 1, 1916. This makes a total retirement of 27,000 shares covering the charter provision for retirement of preferred stock up to July 1, 1916.

While the directors are highly gratified over the results of 1915, they have taken into consideration that a part of the increased earnings for the year were due to causes which may not be permanent.

One contributing factor was the large increase in volume of sales compared with those of 1914, with the result that the overhead expenses consumed a smaller percentage of the gross earnings than could reasonably be expected under normal operating conditions from year to year.

In addition to this, purchases of crude materials during the past year were rather more fortunate than usual.

These conditions may or may not prevail in the future and the directors are not disposed to base the dividend policy of the company upon results that might prove to be temporary in character.

While the company has done its share of the so-called war business, the total amount exported direct and through customers has probably not exceeded 5 per cent. of the total gross business of the year.

A new garage is being built by the Goodrich company, 169 x 315 feet in size, and six stories high. Hugh elevators will be installed, making possible the use of the first two floors as a garage both for company and employees, who own over 600 automobiles, valued at about \$600,000. The upper stories of the garage will be used as service stations and workshops.

The boot and shoe salesmen of the Goodrich company held their annual convention at the Akron plant during the last few days of December. Nearly 200 were present.

The Goodrich company has issued a public challenge, declaring itself willing to throw open its books and records to an independent audit company in order to prove that it manufactures more auto and truck tires combined than any other concern in America.

The new Diamond tires are made of "Velvet-Rubber," a recently developed rubber composition for which exceptional qualities are claimed.

* * *

The annual meeting of the Portage Rubber Co., Barberton, Ohio, was held on January 4, at 10:30 a. m., followed by a luncheon for the stockholders that was served in a recently completed addition to the plant.

By vote of the stockholders the number of directors was reduced from ten to eight, and the following directors were elected for 1916: James Christy, M. S. Long, W. W. Wildman, John Kerch, J. D. Raw, Fred H. Snyder, Dr. O. S. Welty and David Reed. The directors elected as officers, James Christy, president; M. S. Long, vice-president; W. J. Anderson, secretary, and W. W. Wildman, treasurer and general manager. A quarterly dividend of 1½ per cent. was declared on the common stock. Following is the condensed statement of the company, covering the period from December 1, 1914, to December 1, 1915:

ASSETS.

Cash on hand and in bank.....	\$60,184.56
Notes receivable.....	43,940.72
Accounts receivable.....	206,756.09
Stock on hand (raw and finished).....	284,842.36
Real estate, buildings and machinery.....	337,979.97
Trade-marks, patents and good will.....	496,000.00
All other assets.....	15,536.76

\$1,445,240.46

LIABILITIES.

Accounts payable (pay roll not due).....	\$10,806.57
Reserve fund (depreciation).....	6,992.77
Capital stock (preferred).....	750,000.00
Capital stock (common).....	500,000.00
Surplus.....	177,441.12

\$1,445,240.46

Total sales for year 1915.....	\$1,067,858.30
Total sales for year 1914.....	661,848.53
Increase in volume 1915 over 1914.....	61.3%
Total profits for year 1915.....	129,005.76
Total profits for year 1914.....	88,102.13
Increase per cent. of profit.....	46.4%

Since this statement was made the item of trade-marks, patents and good will has been reduced to \$396,000 by taking \$100,000 from the surplus.

* * *

The Goodyear Tire & Rubber Co. has established a plan of retirement awards by which provision is made for stated monthly payments for life to men employees who have reached the age of 70, and women who have reached 65. There is also a condition under which old employees may retire, with awards, under the age limits mentioned. A group insurance plan has been in-

augurated, which allows an insurance policy for \$1,000, free of all cost, to any employee who is or becomes a member of the Goodyear Relief Association, a Goodyear institution of long standing which provides sick and disability insurance.

In order to keep up with orders, it is necessary for the Goodyear factory to work every hour of the day and night. The problem of night work has been met by introducing a six-hour shift and a bonus system for the special force of men who are to work during the hardest part of the night, from midnight to six a. m. This force will work permanently at night, and in return will gain a bonus of 40 per cent. of the amount earned in the six hours of labor.

A unique feature of the Goodyear factory is a large tire-finishing room where the sound of a human voice is rarely heard. The 60 men in this department—said to be the only one of its kind in the city—are all deaf-mutes, and it has been found that they are more skillful in lines of work that require keen sight and quick observation than men who can voice their speech.

The carriage tire department and the fire truck department of the Goodyear company have been combined under one head and placed in charge of F. H. Sawyer, who has had charge of the fire truck department.

* * *

The Adamson Machine Co. will manufacture practically all of the machinery and equipment to be installed in the new plant of the Gillette Safety Tire Co., Eau Claire, Wisconsin.

* * *

The Miller Rubber Co. is to add to its plant an eight-story building, 110 x 175, and a three-story building, 80 x 135 feet, construction of which will begin in the spring. Facilities for the company's manufacture of toy balloons have been increased.

Stockholders of the Miller company have been offered the right to subscribe to \$500,000 worth of stock in the company to the extent of 50 per cent. of their holdings. This stock has been held as treasury stock and is now to be sold.

* * *

The addition to the plant of the Star Rubber Co. mentioned last month will comprise a three-story building 70 x 100 feet. This company has been making automobile sundries and is now to begin the manufacture of tires.

* * *

The Mohawk Rubber Co. has doubled its capital stock, which is now \$500,000.

* * *

The first official meeting of the McLean Tire and Rubber Co., Cleveland, Ohio, was held on January 22. The following officers were elected: John C. McLean, president; W. B. Davis, vice-president, and T. J. Holmden, secretary and treasurer. This organization has purchased the building and equipment of the Morgan & Marshall Rubber & Tire Co., East Liverpool, Ohio, and will commence operating the plant early in February.

* * *

The Keystone Rubber Manufacturing Co., Inc., Erie, Pennsylvania, is making the "Keystone Universal" inner tube, in black with a red reinforced rim strip adapted for either 30 x 3 or 30 x 3½-inch Ford tires.

* * *

The Aluminum Flake Co., with offices in the Ohio Building, Akron, Ohio, has recently completed its new factory on East High street, Barberton, Ohio. The building is 76 x 96 feet. A new drying process and a line of up-to-date machinery have recently been installed.

* * *

The General Rubber Manufacturing Co., mentioned last month, has changed its name to the General Tire & Rubber Co., and is now making tires and tubes at the daily rate of 400 and 1,000, respectively, as well as a large output of tire accessories.

* * *

F. A. Seiberling, president of the Goodyear Tire & Rubber

Co., was one of the 11 men, nationally prominent, who were chosen directors of the World Court League, with the object of ending of war through arbitration.

Ralph Upson, head of the balloon department of the Good-year company, sailed for Europe on January 18, officially representing the Ohio National Guard as special observer of military aeronautics.

Walter W. Price, who is connected with The B. F. Goodrich Co., has been appointed a national deputy, with rank of major, on the staff of General H. Oden Lake, national commander of the Army and Navy League.

John Herron is now associated with the Akron office of Henderson & Korn, assisting H. H. Henderson.

H. A. Price, formerly with The B. F. Goodrich Co., and the Kelly-Springfield Tire Co., has been appointed sales manager of the tire division of the Rubber Products Co., Barberton, Ohio.

H. T. Keating, representing W. R. Grace & Co., dealers in crude rubber, New York City, has recently opened an office in Akron.

W. Armour Johnston, Jr., until recently in charge of rubber manufacture at the Staten Island factory of the S. S. White Dental Manufacturing Co., has accepted a position with the Miller Rubber Co., Akron, Ohio.

WESTERN TRADE NOTES.

THE accompanying illustration shows the plant of the Dry Climate Tire Manufacturing Co., Arvada, Colorado, mentioned in the November, 1915, issue of THE INDIA RUBBER WORLD. At a recent meeting of the directors, E. A. Austin, of Boulder, was chosen president in place of C. W. Clark, resigned; A. L. Davis, of Arvada, vice-president, and W. H. Davis, of Fort Lupton, secretary and assistant treasurer. John F. White, of



FACTORY OF DRY CLIMATE TIRE MANUFACTURING CO.

the First State Bank of Arvada, is treasurer, and William J. Kreuder factory manager.

The Federal Rubber Manufacturing Co., Cudahy, Wisconsin, has opened a direct factory branch in Seattle, Washington, at 1921 Fifth avenue. F. B. Bloom, well known in the tire business on the Pacific Coast, is in charge of the branch.

B. H. Pratt, known through the Pacific Coast territory as factory representative for the Fisk Rubber Co., Chicopee Falls, Massachusetts, has been elected vice-president and general manager of the Federal Rubber Manufacturing Co., Cudahy, Wisconsin, whose recent acquisition by the Fisk company was noted in the January issue of THE INDIA RUBBER WORLD. D. E. Bay-

less, who has been in charge of the San Francisco territory, is now manager of the northern district, including Oregon, Washington, Idaho and Wyoming. C. O. Mars has been given full charge of the central district, comprising all the territory in California lying north of Bakersfield, and R. L. Sargeant is promoted to the head of the southern district, which comprises the remainder of California and Arizona.

Silas H. Jenkins has become the Western manager of the New York Mackintosh Clothing Co. Mr. Jenkins will make his headquarters in the Lytton Building, Chicago, Illinois. Besides directing the sales force in the Western territory, he will personally cover the Central West, Southwest, Northwest and Pacific Coast. Mr. Jenkins is widely known throughout this territory and the South, where he has a host of friends who will no doubt help to make his new position a profitable one.



SILAS H. JENKINS.

Irwin Reed, formerly manager of the Los Angeles branch of the Republic Rubber Co., Youngstown, Ohio, has been appointed president of the Republic Rubber Co. of California.

Tom Wilkenson, formerly Los Angeles manager for the United States Tire Co., New York City, has been made manager of the San Francisco branch, which is the Pacific Coast headquarters of the company, and also controls the Hawaiian and Oriental trade. H. A. Farr, who has been with the United States Tire Co. for many years, will assume managership of the Los Angeles branch.

MOLDED OR FORMED INSULATION SECTION.

The Molded or Formed Insulations Section of the Associated Manufacturers of Electrical Supplies was organized on December 8, 1915, with the following officers: E. B. Hatch, Johns-Pratt Co., Hartford, Connecticut, chairman; R. W. Seabury, Boonton Rubber Manufacturing Co., Boonton, New Jersey, secretary, and Joseph Steinberger, General Insulate Co., Brooklyn, New York, treasurer.

Standing committees were appointed with the following chairmen:

Molded Rubber Insulation: Philip H. Campbell, American Hard Rubber Co.

Fibre Insulation: E. M. Grant, American Vulcanized Fibre Co.

Suspension and Third Rail Insulation: Louis Steinberger, Electroose Manufacturing Co.

High-Heat Molded Insulation: J. G. Miles, Westinghouse Electric & Manufacturing Co.

Molded Composition Insulation: C. F. Siemon, Siemon Hard Rubber Co.

Miscellaneous Insulation: H. S. May, General Bakelite Co.

At a meeting held on January 12 at the Biltmore, the following subcommittee on Molded Rubber Insulation was appointed: R. W. Seabury, Boonton Rubber Manufacturing Co., Boonton, New Jersey; McConnell Shank, The B. F. Goodrich Co., Akron, Ohio; and C. D. Wilson, Luzerne Rubber Co., Trenton, New Jersey.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

THE rise in price of rubber to 4s. per pound is naturally a topic of much discussion in trade circles, though one does not hear so much about rigging the market as was the case when the advance commenced. Shortage of the commodity in hand and uncertainty as to the further effect of enemy submarines have led to a rush of buying orders from manufacturers, not only in this country, but also from America and Europe.

No figures are available as to the amount of rubber lost at sea, no details having appeared in the press, and it is quite possible that the amounts referred to in trade circles are exaggerated.

So far the rise in price of raw rubber has not been reflected in the scrap and reclaimed markets or only to a trifling extent. Of course the reclaimers are not grumbling at the altered state of affairs, which will certainly lead to increased business.

Though there has naturally been some increased activity in plantation shares in the market, it has not amounted to anything like a boom and very little speculation is being indulged in by those who at one time were always discussing the subject. Extra taxation has limited the amount of money available for investment and then there is the excess profits tax on the companies to check fabulous dividends.

Naturally, with the advent of conscription, though in a somewhat modified form compared with continental countries, the labor question tends to become more acute. The local tribunals will shortly have to decide which particular employees of rubber works are indispensable for the business, and their verdicts are being awaited with considerable interest.

No doubt we shall shortly have a general increase in the price of rubber goods, but at the time of writing the only notification I have to this effect is from The B. F. Goodrich Co., Limited, of London, announcing that owing to the general increase in costs they are reluctantly compelled to make a 10 per cent. advance on all mechanical, druggists' and cycle sundries from January 1.

The greatly increased cost of freight across the Atlantic must of course affect the American business, and will act as a set off to our increased cost of labor and coal.

The case of the Daimler Co., Limited, against the Continental Tyre & Rubber Co. (Great Britain), Limited, is to be heard before the House of Lords shortly. The divisional court and the appeal court have held that the Continental is a British company with corresponding rights, despite the fact that all the directors and practically all the shareholders are enemy aliens, and it is sought to have this decision upset. Considerable interest is taken in the case within and without rubber circles.

Many notices have appeared in the press regarding synthetic rubber in Germany. From what I can gather the position is much what it was three or four years ago when motor tires were made of it—at a cost.

The Bayer company is reported to be spending £100,000 on a plant for the manufacture, but it is difficult to conceive how this can pay when the natural product is again available in bulk. The case is on the same lines as cracking petroleum for toluol. This can be and is being done to supply a shortage, but at a cost which would be entirely prohibitive except in war time. Still, with regard to synthetic rubber, one cannot but acknowledge the great discoveries which have been made by German chemists in various fields, and the war is undoubtedly proving a spur to greater activity in the laboratory.

OILSKINS.

One of the latest developments is the trench stocking, which is retailed at 4s. 11d. the pair, obviously for use at the front. It

comes into direct competition with last year's novelty, the trench stocking made of thin waterproofed cloth similar to fishing stocking material and intended to be worn in conjunction with woolen socks and leather boots.

Regarding oilskin stockings, it may be interesting to note that the experimental work as to their suitability has been done by Professor Delepine, of the Public Health Laboratory, Manchester University, the experiments in the manufacture of the goods being carried out by Messrs. Storey, of Lancaster, the original makers of oil baizes for table use.

It will be interesting to see how the oilskin competes in practice with the more expensive rubber. Oilskin hats and hat covers for ladies have come into favor recently.

INDUSTRIAL POISONS IN RUBBER MANUFACTURE.

The communication under this heading in the December issue of THE INDIA RUBBER WORLD has been read with much interest.

All said and done the rubber worker who takes any care of himself and is intelligently supervised has only one real enemy, and that is carbon disulphide. It is satisfactory to find that its very insidious and malevolent nature is now recognized in all civilized countries and its use is mostly under government control through the medium of factory acts. Very different was the state of affairs at the distant period which my memory can recall when the only precautions taken had reference to danger from fire and not to the employees' health.

The cold curing of waterproof cloth having been largely superseded by the dry-heat process, has left the dipping room, where small articles were cold cured, the main theatre for reform, and I must say that the present conditions in works I have visited in Britain and in Germany show a vast improvement on those of the "bad old days."

The American report refers to the danger of carbon tetrachloride. In this case the toxic effect did not come into notice in England until a lady of position died from the effects of its application in a hairdressers' establishment, the result being an inquiry and special regulation. Much the same may be said of the new solvent tetrachlorethane, which after two or three deaths of workmen has now been declared to be much more dangerous than chloroform.

These cases seem to suggest that a more humanitarian method of procedure would be to have new chemicals for manufacturing processes officially examined for toxic properties before they are passed for use instead of waiting for inquests. I am all the more inclined toward this opinion on account of a suggestion in THE INDIA RUBBER WORLD that now is the time for the inventive mind to bring forth new compounding ingredients for the rubber trade to replace those which the war has rendered either unprocureable or unsuited to the modest purse.

Returning to the report it is stated that the two most dangerous poisons are encountered in the acid or cold cure and in the vapor cure. This is modified by saying that the sulphur chloride itself is not really dangerous, being merely an irritant. This then should absolve the vapor cure—where the chloride is vaporized by heat and not by mineral acid—because carbon disulphide is not used in the vapor cure as evolved and practised in this country.

NEWS PARAGRAPHS.

An explosion of naphtha vapor occurred on a foggy morning in December at the proofing works of Lindsay & Williams, Limited, Manchester, whereby one man was killed and another seriously injured. At the inquest the jury found that the ex-

plosion was caused by the contact of naphtha fumes from the solution vessels with naked gas jets, and recommended that all lights, whether electric or gas, be enclosed by globes and that naked lights should be prohibited.

Mr. Morton, of the laboratory staff of Pirelli & Co.'s new cable works at Southampton, has accepted an appointment at Birmingham with the Dunlop Rubber Co., Limited.

J. W. Shaw, late of the Paragon Rubber Manufacturing Co., Hull, is now director and works manager of the Pomona Rubber Co., Limited, Manchester.

The British Foreign Office has reported that out of 300 bags of parcels post mail seized on the steamship "Hellig Olav," 109 bags contained nothing but crude rubber. The estimated weight of the rubber seized was 8,000 pounds.

The Goodyear Tyre & Rubber Co., Limited, London, has recently opened a sales branch in Dublin, to take care of its increasing trade in Ireland.

OBITUARY NOTES.

The position of commercial manager at the works of the Leyland & Birmingham Rubber Co., Limited, Leyland, vacant by the death in active service of Lieutenant-Colonel Fallows, has been filled by the appointment of Mr. Pratt, late with G. MacLellan & Co., Glasgow.

Kenneth Pelmore, whose death at the early age of thirty years I regret to record, was better known to the rubber trade as Kurt Pfeiderer of the well-known Peterborough firm specializing in rubber-washing machines.

Lieutenant Walter Wild, late of the Wood Milne, Limited, has suffered a severe bereavement in the death at the Dardanelles of his son, Trooper John Wild, of the North Auckland Mounted Rifles, New Zealand expeditionary force.

THE DUNLOP RUBBER CO., LIMITED, REPORT.

The Dunlop Rubber Co., Limited, reports net profits for its last fiscal year of £411,639, making, with £33,241 brought forward, a total of £444,880 [\$2,165,013]. After paying dividends on the preference and ordinary shares and writing off £175,000 [\$851,637] on real estate, plants and equipment, the net balance of £75,528 [\$367,557] is carried forward to this year's account.

To insure a constant and uniform supply of the best cotton fabrics the company has entered into arrangements whereby spinning and weaving mills of the most modern construction, operating nearly 50,000 spindles and 200 heavy looms, have been built at Rochdale, near Manchester, England, on the purchase of which the company has an option.

The directors expressed the opinion that the outlay for the new establishment at Bromford, to cost about £330,000 [\$1,605,945], and the purchase of the cotton goods mills, with the expenses entailed by the excess-profits tax law and the redemption of the balance of the parent tire debentures, can be accomplished without the issue of new capital or affecting dividends, but recommended that they should be given that power to increase the authorized preference capital from £800,000 to £1,000,000.

TRADE NOTES FROM SCANDINAVIA.

SWEDEN.

THE Liljeholmens Hampspunerei och Kabelfabrik, Liljeholmen, manufacturers of insulated wire and cables, has recently increased the salaries of its employees 10 per cent.

A new tire and general rubber goods repairing company has been incorporated in Gothenburg, under the name of Göteborgs Gummireparatörsverksstad, Einar Lundström.

Victor Anderson, owner of a large belt, packing and general rubber mechanical goods business in Malmö, died recently, aged forty-three years. The business, which was founded by Mr.

Anderson in 1902, will be continued under his name at 4 Jörgen Kocksgatan, Malmö.

The Trelleborgs Gummifabriks Aktiebolage, Trelleborg, engaged chiefly in the manufacture of rubber tires, has increased its capital stock from 300,000 to 800,000 crowns [\$80,400 to \$214,400].

O. Nelson, formerly of the Hartford Rubber Works Co., Hartford, Connecticut, has been appointed factory manager of the Gislaveds Gummifabriks Aktiebolag, manufacturer of automobile tires, Gislaved.

A serious fire recently destroyed more than \$30,000 worth of crude rubber and other materials of the Viskafoss Rubber Works, Viskafoss.

NORWAY.

The Norwegian Government is spending 100,000 crowns [\$26,800] in erecting and equipping an aeroplane factory with a shop large enough to assemble four machines simultaneously.

A circular issued by the government, dated November 12, 1915, places an embargo on all exports of woolen or cotton rubberized fabrics and also on garments made of these fabrics.

Aktieselskabet Skandinaviske Kabel og Gummifabriker, a new company planning to manufacture cables and general rubber goods, was recently incorporated in Christiania with 1,200,000 crowns [\$321,600] capital stock.

DENMARK.

During the year 1913, Denmark imported \$112,947 worth of crude rubber from France. Since the outbreak of the war this trade has entirely ceased.

Aktieselskabet DeForede Gummi og Luftringefabriker, Copenhagen, recently declared a 25 per cent dividend. This company's production of automobile tires has been increased from 25 to 60 tires per day in spite of the many difficulties that have been experienced in obtaining sufficient quantities of crude rubber and other raw materials. Dr. Alfred Benyon has been elected president of the company.

Through the joint efforts of the Danish "Landbank" and the British Ambassador at Copenhagen, the Copenhagen Auto Cab Co. has obtained a large consignment of tire casings and inner tubes.

Aktieselskabet Unmack & Pedersen, Aalborg, wholesale dealers in transmission belts, packings and mechanical rubber goods, have increased their capital stock from 140,000 to 200,000 crowns [\$37,520 to \$53,600].

SMUGGLING RUBBER INTO GERMANY FROM HOLLAND.

The smuggling of rubber from the Netherlands into Germany has become a profitable business, according to a report printed in a Paris paper. On account of the high prices obtainable in Germany much rubber has been sent there, the Dutch consumer being compelled to do without.

The government of the Netherlands, in striving to maintain strict neutrality, requires owners of automobiles desiring new tires to turn in their old ones, regardless of how damaged and dilapidated they may be, in order to prevent them being sent to Germany.

It is said that much smuggling is being indulged in, although smugglers, when apprehended, are subject to a fine of 16 florins [\$6.43] per pound. It is intimated that the Germans are glad to pay a price that makes rubber smuggling profitable, even if the smuggler is occasionally apprehended.

Weise & Co., large importers and dealers in crude rubber and gutta percha in Rotterdam and Amsterdam, Holland, have announced that M. J. Overeynder has withdrawn from the firm and has been succeeded by Mr. F. A. F. De Gruyter, who has been granted power of attorney at the Amsterdam branch.

The Rubber Trade in Germany.

By Our Regular Correspondent.

THE opening up of the route through the Balkans to Turkey and the Orient eclipses all late events in its importance to our commerce and industry. Our industries are suffering from lack of orders as much as from lack of raw materials and the clearing of the road to the Orient will enable us to obtain not only the needed raw materials but will permit us to reach a market for the sale of our manufactured products. The importance of the event escapes no one and this explains the joyous celebrations that marked the announcement of our latest victories.

Before our troops had cleared the way our Balkan Association was organizing and by the time this letter reaches you we will again be trading with the Orient. Our rubber industry, closely allied as it is with other industries, will be able to supply practically all demands and will therefore participate in this prosperity.

Our rubber manufacturers can only produce a limited number of articles from crude rubber, but they are able to make almost anything in "war qualities," that is to say, in qualities containing no crude rubber, but only reclaimed and substitute stock mixed with the necessary fillers and vulcanizing ingredients. Though not as elastic and durable as standard quality rubber goods, these "war qualities," under the circumstances, are satisfactory substitutes that answer the purposes for which they are used.

Some articles cannot be made in "war qualities." Surgeons' gloves, for instance, must contain pure rubber, because no substitute will stand the high heat necessary in sterilizing. "War quality" jar rings recently caused large quantities of preserves to become useless by letting air into the containers. All this is unfortunate but the fact remains that our rubber manufacturers are producing thousands of serviceable articles which, without their intelligence and initiative, would not be available at all.

COMMERCIAL EXPANSION PLANS.

Of late various commercial and industrial organizations have been holding meetings to discuss developments of great importance. The Commercial Treaty Association, which represents practically all the commercial and industrial interests of the empire and has for its object the advising of the government in making commercial treaties, met on November 26 in Berlin. The action taken was not made public and, therefore, cannot be reported. All that may be said is that the commercial concessions to be exacted from our enemies were discussed at length and that the association has sent confidential representatives to Russian Poland, Holland, Turkey, the United States, Argentina, Uruguay, the Far East, and other places of commercial importance. Their duties are strictly commercial in character and involve nothing political or military.

Other meetings of less importance were held by the Union of German Bicycle Manufacturers and by the Association of German Cycle & Motor Vehicle Dealers.

Automobile and automobile tire interests here and in Austria-Hungary are giving much attention to the possible danger of an American motor car invasion following the war. It has been seriously suggested that German and Austro-Hungarian automobile and tire manufacturers combine together to produce a standard model motor car to compete in price as well as in quality with anything America can produce.

Our manufacturers recognize that quantity production is the secret of American low-priced automobiles and that, to compete, they must find means for following the "American system."

CHRISTMAS PREPARATIONS.

We are now preparing for our second "war Christmas." Most of the gifts went to the men at the front. The majority were useful presents, among which, judging from show windows, rub-

ber goods were prominent. Many of our large stores had elaborate window displays of "Christmas in the Trenches." Rubber goods were much in evidence. Garments, footwear, ground cloths, cushions, tobacco pouches, sponges, sponge bags, folding wash basins and bath tubs, combs, etc., all in "war qualities" of rubber are shown as desirable presents.

One war novelty attracting much attention is a combination of elastic bands and an elastic fabric cap, all impregnated with powerful chemicals. These are known as "vermin guards," and are intended to be worn next to the skin to prevent vermin entering underneath the clothing and scattering over the body of the wearer. Soldiers say that these "guards" are much more practical and more effective than the powders and salves heretofore used for the same purposes.

TRADE NOTES.

Edward Pohlman, of Varel, Oldenberg, has founded a transmission belt factory to be known as the North German Transmission Belt Works.

The North German Cable Works, Neukölln, reports 10 per cent. profits.

The B. Pollack Co., rubber manufacturer, Walterhausen, has declared a 6 per cent. dividend.

The German Cable Works, Alt-Boxhagen, near Berlin, reports a satisfactory year and has declared a 6 per cent. dividend.

The Humboldt Machine Works, Cologne-Kalk, recently held its annual meeting of shareholders at which 9,813,000 marks (\$2,335,494) capital was represented. A 7 per cent. dividend was declared and ordered paid immediately.

The Imperial Chancellor has ordered the sequestration of the property of the Alsatian Rubber Goods Manufacturing Co., Steinbach, Alsace.

PERSONALS.

Dr. Konrad Delbrück, formerly collaborator of Dr. Hoffmann, at the Bayer Chemical Works, Elberfeld, well known for his work relating to the production of synthetic rubber and the production of acetone by direct refining, has been killed at the front. He was 31 years old and just previous to the war had erected for the Bayer company a large acetone distilling plant.

The iron cross for bravery was recently awarded to Captain of Reserves Osterwald, manager Excelsior Rubber Works, Hanover, who is now at the front.

NOTES FROM AUSTRIA-HUNGARY.

The proposed increase of 25 per cent. in domestic postal rates is being bitterly opposed by manufacturers and traders through their organizations.

The latest reports from Vienna tell that many bankruptcies are occurring among cycle manufacturers and dealers.

Hugo Goldschmidt and Marcel Herczeg, directors of the Semperit Austro-American Rubber Works, have organized a new company at Vienna, the Sembusto Elastic Tire Co., which will not conflict with the Semperit company.

The Hungarian Rubber Goods Manufacturing Co. recently issued new stock, which increases its capital from 4,500,000 to 6,000,000 crowns (\$913,500 to \$1,218,000). The new stock has been offered to the present shareholders.

The Japanese are now extending their planting activities in the Ulu Selangor district. Y. Hasegawa, of Kuala Kubu, has recently acquired a large acreage in Ampang Pechah Mukim with a view to planting rubber.

Rubber Planting Notes.

FRENCH INDO-CHINA RUBBER PLANTATIONS AFFECTED BY WAR MEASURES.

FRENCH INDO-CHINA is one of the latest on the list of plantation rubber-producing countries, and it is only in the last few years that attention has been given to the creation of modern plantations. The first rubber from this colony was obtained from wild plants, mostly of the vine variety. In the second half of 1913, when the crash came in rubber prices, most of the French Indo-China *Hevea* plantations were merely in course of creation. Many had just finished planting.

Coming at this stage, the crisis made it very difficult for these non-producing plantations to obtain credit and, in view of the slump in rubber values, very little money could be raised by the sale of stock of companies that would not produce for a number of years to come. All the estimates of future income and future profits on crops were discredited by the general depreciation of the market value of crude rubber. In the face of these difficulties the Indo-Chinese planters and plantation companies applied to the French Bank of Indo-China for loans to enable them to insure the upkeep of their property until the trees would come into bearing. The French colonial laws authorize banks, under governmental supervision, to loan money on future crops, but it was discovered that the provisions of the laws did not cover rubber crops that would not be available for a number of years. Consequently it was decided to obtain long-date loans that could be repaid in annuities, to begin at a date when the plantations would be in bearing. Arrangements were made on this basis and, as the government's sanction was essential, it was requested to give consent. This was early in 1914, and the government has not as yet given any definite reply.

Serious conditions have developed; lack of funds has caused the plantations to be seriously neglected; trees that now could be tapped for small quantities of latex are not touched because tapping would be unprofitable at present prices. Many plantations have been obliged to discharge their entire staff. The moratorium resulting from the war in Europe has stopped the periodical remittances that were coming forward from the sale of shares and from small loans obtained in France. To complete the havoc, the French government has prohibited all exports of rubber to other than French ports, thus closing to Indo-Chinese rubber its principal market, Singapore. This embargo is causing much discontent among the planters who, apart from resenting this reflection on their honor and patriotism, believe that the British Government has taken adequate measures to prevent rubber reaching the enemies of the Allies, and, therefore, it is unnecessary to bar Indo-Chinese rubber from the Singapore market.

A new Governor-General has recently been appointed to Indo-China, and hopes of relief are renewed. Should the government continue to ignore the plantation interests, a very serious condition is likely to develop.

PLANTATION RUBBER IN GERMAN WEST AFRICA.

The cultivation of rubber in German West Africa began about 15 years ago with plantings of *Funtumia Elastica*, the indigenous rubber tree. *Hevea* was not introduced until 1907, when seed was obtained from the East. By 1911, about 25,000 acres were planted in rubber, this area being divided equally between *Funtumia* and *Hevea*. Since 1911 *Funtumia* has been steadily losing favor as a plantation tree, chiefly on account of its poor yield in latex as compared with *Hevea*.

No new plantings have been recently made and, as the trees become exhausted, they are cut out and *Hevea* is planted instead. The latter demands less from the soil than *Funtumia*, yields more rubber, and is better suited for interplanting with cocoa.

Lack of seed and other planting material as well as lack of labor and the sowing of the seed in abnormally wet weather have retarded the development of *Hevea* plantings.

It is stated that both *Funtumia* and *Hevea* on German West African plantations suffer from a species of root disease and that in addition to this the *Funtumia* has to contend with "stag beetles"; however, the principal difficulty on these plantations has always been labor.

Hevea was first tapped in the season 1912-13. The exports of plantation rubber from German West Africa have been comparatively small, though increasing steadily, as shown by the following figures: 1909, 5,922 pounds; 1910, 5,795 pounds; 1911, 23,912 pounds; 1912, 53,040 pounds.

The forests of German West Africa produced good qualities of wild rubber, but this production has been on the decline for a number of years and is now practically a thing of the past.

THE RUBBER INDUSTRY OF ANGOLA, PORTUGUESE WEST AFRICA.

Angola, the largest of Portugal's African possessions, a rubber producing country of comparatively great importance 20 years ago, is today affected by a similar crisis as the Congo, Brazil and other countries producing wild rubber.

At times rubber has formed as high as 75 per cent. of the total value of Angolan exports. In 1910, the shipments of rubber amounted to 2,438 tons and were valued at \$6,007,200; in 1911, 1,968 tons, value \$2,972,400; in 1912, 2,188 tons, value \$3,470,000; in 1913, 1,489 tons, value \$1,993,905; and in 1914, 1,336 tons, value \$725,206.

The primitive methods employed by the natives in gathering, cleaning and drying the rubber resulted in the product arriving on the European markets in poor condition. However, owing to the great demand, Angolan qualities still obtained profitable prices until quantities of clean plantation rubber made their appearance.

Angolan rubber comes mostly from the remote interior of the Benguela district, where it is obtained by the natives from vines; *Landolphia Kirkii*, *Landolphia florida*, etc.; and is sold at the trading stations which buyers have established in many parts of the Benguela plateau.

Recently an Englishman has established a modern rubber cleaning plant at Bihé which will probably lead to an improvement in Angolan wild rubber qualities.

As to plantation rubber, the friable soil of Angola and the rainfall, are very favorable to *Manihot*, two varieties of which have been successfully cultivated at an altitude of from 2,500 to 3,000 feet. On December 31, 1914, *Manihot* plantation rubber was selling at 2s. 7d. per kilogram [29 cents per pound] in the Benguela market.

HEVEA RUBBER YIELDS IN SOUTH INDIA.

The *Hevea* plantations in South India have been producing for the past six years, but, compared with Ceylon and Malaya, the yields in dry rubber per acre have never been very satisfactory, due apparently to climatic conditions.

Of late, however, an experienced planter has openly taken the view that the climate is not wholly to blame and that it should not be made the scapegoat for past sins and mistakes of planters who have failed to adapt the proper methods of cultivation and tapping to the climatic conditions.

In the early days of rubber planting in South India most of the planters had no practical knowledge of the task they were undertaking and 'overtapping' was much indulged in, so that today many trees must be allowed to rest until damaged bark is renewed by nature. This process of bark renewal in many cases

takes seven years, so bad is the state of the overtapped trees. Another cause of the comparatively low yields per acre is the overcrowded state of many plantings. It is not unusual to find as many as 200 trees to the acre in spite of the fact that estates, thinned down to 105 trees have produced more rubber than the overcrowded ones.

The opinion is advanced that future yields would be materially increased were tapping operations stopped each year from June 15 to the middle of August—during the southwest monsoon—when fully 50 per cent of the annual rainfall occurs. During this wet, windy season the trees experience a second leaf-fall quite distinct from the regular seasonal leaf-fall, which occurs in the early part of the year. However, the trees do not shed all their foliage as in the regular wintering season. Some are more affected than others; one may be almost totally denuded while its neighbor will retain its foliage.

Several theories have been advanced to explain this occurrence. Some believe it to be due to disease; others hold that it is a physiological response of the tree to climatic conditions.

REVIEW OF RUBBER CULTIVATION IN NETHERLANDS EAST INDIA.

SOUTHEAST ASIA and Netherlands East India were the only producers of cultivated *Ficus* rubber previous to 1900.

The first attempts to plant rubber trees in Java were made with *Ficus elastica*, and thereafter with other kinds, including *Hevea Brasiliensis*, *Castilloa elastica* and various *Manihot* species. The cultivation of the latter species attained considerable importance, but compared with *Hevea* these varieties are given small attention.

It was not until 1905 that the cultivation of rubber was undertaken to any great extent in Netherlands East India. From that



LATEX FACTORY AND CARRIERS IN THE FAR EAST.

date the investments in this branch of agricultural industry gradually increased, and numerous plantations were opened up where rubber was cultivated on a large scale.

HEVEA BRASILIENSIS

Starting in a small way in 1876, experiments were made in propagating this tree, and in Java and Sumatra an opportunity was afforded to gather data respecting growth, etc., which have been of great assistance in cultivation later undertaken on an extensive scale.

The acclimatization of *Hevea* in Netherlands East India has been entirely successful. The trees look very healthy and the growth appears to be satisfactory.

It has been found possible to reduce parasitic root and stem

diseases, by proper precautionary measures. Leaf diseases, however, have not proven to be of as malignant a character as in other colonies.

The important problem of tree planting distances has been settled by adopting a more open spacing than formerly and interplanting with catch crops of *Robusta* coffee. The usual planting distances for *Hevea Brasiliensis* in recently opened plantations have been increased to 18 x 18, 20 x 20, or 12 x 24 feet apart.

At the beginning of 1913 the planted acreage of *Hevea* in Netherlands East India was as follows:

	In Java.	In the possessions beyond Java.	Total.
<i>Hevea</i>	63,387	168,151	231,538
<i>Hevea</i> interplanted	129,788	53,986	183,774
Total	193,175	222,137	415,312

In addition to the above 1,000,000 *Hevea* trees are to be found distributed on estates in the whole colony.

The *Hevea* is considered tappable when $\frac{3}{4}$ to 4 years old, but in Java the trees are sometimes not tappable before their fifth year.

The preferred method of tapping young trees is a V incision covering half the circumference of the stem. The stems of older trees are tapped by quarters on the "Half Herringbone system." The tapping process of each quarter is extended to $\frac{1}{4}$ to $\frac{1}{2}$ years, thus requiring 5 or 6 years to tap the full circumference of the stem.

Plantation labor expense has greatly increased, due to shortage of laborers, but in comparison with other rubber producing centers, the cost of labor in Netherlands East India is not excessive.

The following statistics show the exports of *Hevea* rubber from Java and the East Coast of Sumatra during 1912 and 1913:

	Java.		East Coast Sumatra.	
	1912.	1913.	1912.	1913.
Holland	194	1,006	35	384
United Kingdom	255	1,000	102	759
Elsewhere	37	339	1,185	1,893
Totals	486	2,345	1,322	3,036

*Tons of 2,200 pounds.

In regard to the other possessions of the Archipelago, the total exports of those islands in 1912 were 536 tons of 2,200 pounds.

EXTENT OF PLANTING AREA.

In Java the area planted with rubber cannot be extended, because of topographical and climatological circumstances and the fact that only small plots of suitable land are now available. In Sumatra, however, the area for the cultivation of *Hevea* could easily be extended to even three times the present space. The same can also be said of Borneo.

The area and exports of *Ficus elastica*, *Castilloa* and *Manihot Glaziovii* rubber are practically negligible.

GUTTA PERCHA.

Gutta percha is only to be found in East Asia. In Netherlands East India it grows in the Rhio Archipelago, in Banka, Borneo, Sumatra and in New Guinea, besides a few other islands. The product is principally obtained from the *Palaquium* species. The bulk of the product is from wild trees, which are felled for the purpose of tapping.

To prevent the extinction of the *Palaquium* species plantations have been opened up in Netherlands East India since 1885, namely, the Government Gutta Percha Plantations at Tjipetir, where practically only trees of this species are grown.

The exports of plantation produced gutta percha from Java totaled 6 tons in 1912 and 25 tons in 1913.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

Recent Patents Relating to Rubber.

THE UNITED STATES.

ISSUED DECEMBER 14, 1915.

- N**O. 1,163,701. Rubber jacketed wheel rim. W. F. Stearns, Evans-ton, Ill.
- 1,163,732. Bath apparatus. J. T. Barlow, Oak Park, Ill.
- 1,163,736. Rim for vehicle wheels. R. S. Bryant, assignor to The Standard Welding Co.—both of Cleveland, Ohio.
- 1,163,805. Bottle closure. F. R. Bonn and B. D. Hamill—both of Salt Lake City, Utah.
- 1,163,835. Bed pan cushion. A. R. Logan and M. A. L. Barrelle—both of Chelmsford, Mass.
- 1,163,908. Air bag. R. T. Griffith, assignor to Miller Rubber Co.—both of Akron, Ohio.
- 1,163,927. Valve stem. G. Hughes and D. F. Givens—both of Syracuse, N. Y.
- 1,163,938. Horseshoe pad. J. H. Matchett, Oakland, Cal.
- 1,163,993. Hard rubber plug for storage battery. B. Ford, Philadel-phia, Pa.
- 1,163,995. Hose coupling. G. P. Frank, Roselle, N. J.
- 1,164,157. Fountain pen. S. Zollinger, Woodhaven, N. Y.
- 1,164,177. Heel pad. H. M. Eaton, Hudson, Mass.
- 1,164,190. Pneumatic tire. H. Jancovich, Pittsburgh, Pa.
- 1,164,214. Anti-skid device. F. S. Roberts, Yonkers, N. Y., assignor to Kelly-Springfield Tire Co., Jersey City, N. J.
- 1,164,219. Insect guard with rubber center. F. J. Rush, New York, N. Y.
- 1,164,279. Anti-skid device. W. Grus, Jr., assignor to Grus Leaf Spring Oiler Co.—both of Chicago, Ill.
- 1,164,303. Laminated tube of rubber and fabric. E. S. Nicewarner, Chi-cago, Ill.
- 1,164,304. Laminated tube of rubber and fabric. E. S. Nicewarner, Chi-cago, Ill.
- 1,164,312. Life saving garment. W. R. Pike and T. S. Morton—both of Tuxedo Park, N. Y.
- 1,164,316. Arch support. F. Roehn, assignor to The Scholl Manufacturing Co.—both of Chicago, Ill.
- 1,164,521. Protective covering for cable or hose. O. P. Houben, Akron, Ohio.
- 1,164,545. Protective tire covering. A. J. Moonen, Denver, Colo.
- 1,164,554. Vehicle wheel. T. C. Shepherd, Jr., Joliet, Ill.

ISSUED DECEMBER 21, 1915.

- 1,164,642. Garment. V. Guinsburg, assignor to The I. B. Kleinert Rub-ber Co.—both of New York, N. Y.
- 1,164,654. Fountain pen. G. M. Kraker, assignor to Kraker Pen Co.—both of Kansas City, Mo.
- 1,164,834. Pneumatic tire casing. J. A. MacMillan, Dayton, Ohio.
- 1,164,928. Elastic arm band. C. F. Corcoran, Williston, N. D.
- 1,164,946. Solid tire. R. L. Lynch, Campbellsburg, Ky.
- 1,164,963. Demountable tire and rim. M. C. Schweinert, West Hoboken, N. J.
- 1,164,970. Sanitary semi-skirt. L. Winn, Chicago, Ill.
- 1,164,985. Golf practicing device. C. S. Britton, Cleveland, Ohio.
- 1,165,045. Dress form combining an outer elastic envelope and inflatable sacks. C. A. Ufford, Boston, Mass.
- 1,165,052. Rubber cushion or buffer. W. J. Williams, La Grange, and J. C. Bowman, Chicago—both in Illinois.
- 1,165,057. Tire inflating device. T. Bayly, assignor of one-half to D. Alvord—both of Clearwater, Fla.
- 1,165,094. Demountable rim. C. C. Harbridge, Chicago, Ill., assignor to Detroit Demountable Rim Co., Detroit, Mich.
- 1,165,095. Demountable rim. C. C. Harbridge, assignor to Detroit De-mountable Rim Co.—both of Detroit, Mich.
- 1,165,096. Demountable rim. C. C. Harbridge, assignor to Detroit De-mountable Rim Co.—both of Detroit, Mich.
- 1,165,145. Cushion tire comprising a collapsible wearing shoe. F. V. Ubezzi, assignor to Transcontinental Wheel Co.—both of New York, N. Y.
- 1,165,153. Tire chain. L. W. Claska, Garden Valley, Idaho.
- 1,165,216. Rubber covered club. E. E. Westen, Christiana, Norway.
- 1,165,235. Rubber heel. E. J. Emery, Portsmouth, N. H.
- 1,165,275. Anti-colic nurser. M. Montgomery, Mankato, Minn.
- 1,165,282. Automatic tire inflater. J. H. Pearson, Indianapolis, Ind., as-signor of one-third to W. O. Jackson, and one-third to J. U. Baughman.
- 1,165,283. Handle for air brake coupling. C. M. Pettey, Oxford, N. C.
- 1,165,322. Blow-out patch. M. Copps and A. B. Crewdson, Charter Oak, Iowa.

ISSUED DECEMBER 28, 1915.

- 1,165,390. Rim for solid tires. W. E. Copithorn, Natick, Mass.
- 1,165,398. Cushion tire. M. Dickerson, assignor of one-half to F. L. Luz—both of Newark, N. J.
- 1,165,449. Tubular collapsible diaphragm for hose couplings. E. W. Riets, assignor to Chicago Car Heating Co.—both of Chicago, Ill.
- 1,165,464. Hose clamp. F. C. Stuckel, assignor to Universal Fastening Co.—both of Racine, Wis.
- 1,165,484. Rubber grip for handles. W. E. Zimmerman, Owosso, Mich.

- 1,165,486. Packing for rods and the like. R. Allen, Caversham, England.
- 1,165,512. Resilient tire. T. N. Jordan, Long Beach, Miss.
- 1,165,533. Sanitary apron. C. G. Nelson, Pittsburgh, Pa.
- 1,165,576. Vehicle tire. H. Dech, assignor to Eureka Tire Co.—both of Trenton, N. J.
- 1,165,577. Vehicle tire. H. Dech, assignor to Eureka Tire Co.—both of Trenton, N. J.
- 1,165,630. Pneumatic tire casing. E. C. Seward, Jr., New York, N. Y., assignor to Eureka Tire Co., Trenton, N. J.
- 1,165,631. Pneumatic tire casing. E. C. Seward, Jr., New York, N. Y., assignor to Eureka Tire Co., Trenton, N. J.
- 1,165,687. Innersole. C. B. Mansbach, assignor of one-half to F. L. Price—both of Brockton, Mass.
- 1,165,780. Transmission belting. K. W. Jappe, Brooklyn, N. Y.
- 1,165,810. Demountable wheel rim. Q. L. Sparks, Stamping Ground, Ky.
- 1,165,845. Resilient vehicle tire. J. Cairns, Hove, Brighton, England.
- 1,165,847. Rubber heel cushion. C. E. Cashman, Fitchburg, Mass.
- 1,165,876. Pressure indicator for pneumatic tires. W. E. Heberling, Youngstown, assignor of one-fourth to G. Goodman, Struthers—both in Ohio.
- 1,165,888. Armored tire. W. F. Macklin, Appleton, Wis.
- 1,166,026. Tire and inner tube. I. J. Webster, Haverhill, Mass., assignor to Reliance A. C. Co., Inc., New York, N. Y.
- 1,166,043. Demountable rim. S. J. Dobzynski, Cuyahoga Falls, Ohio.
- 1,166,059. Repair coupling for air hose. R. W. Ledbetter, Birmingham, Ala.
- 1,166,065. Cushion tire. A. M. Livelsberger, Kalamazoo, Mich., assignor of one-half to A. Bair, Tiffin, Ohio.
- 1,166,152. Telephone receiver. T. Rhodus, Chicago, Ill., assignor to The Magniphone Co., a corporation of Arizona.
- 1,166,158. Hose clamp. C. A. Simmons, Albany, N. Y.
- 1,166,223. Hose coupling for fire hydrants. G. W. Killin, Huntington, W. Va.
- 1,166,248. Internal heel cushion. J. Patten, New York, N. Y.
- 1,166,314. Cushion tire. C. L. Beckham and H. C. Beckham—both of Toledo, Ohio.
- 1,166,338. Urethritic syringe. G. J. Duggan, assignor to Beckton, Dickin-son & Co.—both of Rutherford, N. J.
- 1,166,368. Puncture proof tire. J. H. Harvey, Scranton, Pa.
- 1,166,374. Sprinkling device. G. E. Jackson, assignor of one-fourth to J. W. Jackson—both of Springfield, and one-fourth to F. C. Jackson, Akron—all in Ohio.
- 1,166,406. Nursing bottle. R. R. Baker, assignor to H. H. Baker—both of Buffalo, N. Y.
- 1,166,407. Air brake hose coupling. W. E. Benn, McAdam Junction, New Brunswick, Canada.
- 1,166,416. Cushion wheel. G. W. Smith, assignor to The Elastic Wheel Co.—both of Baltimore, Md.

ISSUED JANUARY 4, 1916.

- 1,166,478. Suspender. E. E. Peck, Hugo, Okla.
- 1,166,548. Cushion wheel. H. J. Sewell, Highland Park, Mich.
- 1,166,622. Blow-out patch. E. H. Morehouse, Culver City, Cal.
- 1,166,662. Nozzle for syringes. R. B. Crump, Hoboken, N. J., and J. Bernstein, New York, N. Y.; said Bernstein assignor to said Crump.
- 1,166,741. Duplex fountain pen. A. Brochetti and J. Familet—both of Dunkirk, N. Y.
- 1,166,761. Medicine container with bulb. A. C. Higgins, assignor to H. K. Mulford Co.—both of Philadelphia, Pa.
- 1,166,811. Rubber mat. W. F. Bowers, San Francisco, Cal.
- 1,166,861. Pneumatic tire armor. F. W. Simons, Vallejo, Cal.
- 1,166,862. Rubber powder flask. S. B. Smoot, Dimmock, assignor of one-half to W. E. Deegans, Mount Hope—both in West Virginia.
- 1,166,863. Fountain pen. H. Stein, Vienna, Austria-Hungary.
- 1,166,946. Croquet mallet having a core and filaments of rubber wound thereon. T. Taylor, Jr., Hubbard Woods, Ill.
- 1,166,972. Vehicle wheel rim. B. Darrow, assignor to The Goodyear Tire & Rubber Co.—both of Akron, Ohio.
- 1,166,984. Surgical bandage. E. Gulacshi, Youngstown, Ohio.
- 1,166,990. Wheel rim for pneumatic tires. F. P. Johnson, Danville, Pa.
- 1,167,062. Dental saliva ejector. F. Groshans, Baltimore, Md.
- 1,167,103. Heel pad for shoes. M. J. Nolan, Chicago, Ill.
- 1,167,113. Flesh reducing garment. T. W. Rogers, Columbus, Ohio.
- 1,167,196. Pencil holder. C. B. Mercer, North Pittston, Pa.
- 1,167,210. Rotary shaft or rod packing. S. Orr, Tarpon Springs, Fla.
- 1,167,226. Garter. L. M. Spann, Columbus, Miss.
- 1,167,236. Apparatus for promoting the growth of hair. L. J. Widness, New York, N. Y.
- 1,167,306. Receptacle closure. C. R. Keeran, Bloomington, Ill.

ISSUED JANUARY 11, 1916.

- 1,167,497. Collapsible bucket. F. C. Hayes, Altamont, N. Y.
- 1,167,596. Metal chain tread tire. A. Rich, Stamford, Conn.
- 1,167,669. Hose supporter. R. E. Ward, Kansas City, Mo.
- 1,167,836. Mileage indicator for tires. A. C. Pratt, Glen Ridge, N. J.
- 1,167,849. Infant's folding bath tub. M. C. Sherman, Ben Avon, Pa.

- 1,167,885. Heel and sole blank. E. E. Carll (known as E. C. Edwards), West Haven, Conn., assignor to Cooperative Rubber Co., a corporation of Maine.
- 1,167,930. Life-saving appliance. A. C. Rasmussen, Chicago, Ill.
- 1,167,968. Teat cup. O. Anderson, Lancaster, Pa.
- 1,167,979. Vaginal irrigator. M. B. Clarke, Akron, Ohio.
- 1,167,980. Indicator for pneumatic tires. S. F. Cole, Purcellville, Va.
- 1,167,992. Brassière with elastic fabric strips. E. Guggenheim, assignor to M. W. Schloss—both of New York, N. Y.
- 1,168,056. Nursing nipple. H. V. Brumley, Plandome, N. Y., assignor to Whittall Tatum Company, New York, N. Y.
- 1,168,219. Hose sprinkler. F. B. Miller, Los Angeles, Cal.
- 1,168,222. Hose-mending device. J. E. Peck, Logan, W. Va.
- Re-issues.*
- 14,046. Hose construction. J. F. Joseph, Akron, Ohio, assignor to The B. F. Goodrich Co., a corporation of New York.
- 14,049. Resilient heel. J. F. Tufford, assignor to The I. T. S. Rubber Co.—both of Elyria, Ohio.

ISSUED JANUARY 18, 1916.

- 1,168,287. Wheel comprising an annular pneumatic tube. J. B. Cumming, Ellerslie, Auckland, New Zealand.
- 1,168,306. Rubber footwear. A. Johnson, Duluth, Minn.
- 1,168,354. Hard rubber stem for tobacco pipes. O. Wartemann, New York, assignor to Traun Rubber Co., College Point, N. Y.
- 1,168,381. Package for toy balloons. H. A. Dodge, Newark, N. J.
- 1,168,426. Automatic air-hose coupling. J. Roy, Los Angeles, Cal.
- 1,168,597. Anti-slipping attachment for tires. H. O. Brunton, Cincinnati, Ohio.
- 1,168,644. Milk testing tube with rubber stopper. H. Jone, Brooklyn, N. Y.
- 1,168,674. Tire casing. G. J. Reuter, Newark, assignor of five-twelfths to A. M. Herman, West Orange, and three-twelfths to L. R. Freund, Newark—all in New Jersey.
- 1,168,679. Rubber napkin holder. C. H. Rutherford, Jerome, Ariz.
- 1,168,709. Pneumatic and cushion tire for automobiles. W. H. Clay, Cameo, Colo.
- 1,168,732. Elastic topped brassière. C. Mayer, assignor to Natures Rival Co.—both of Chicago, Ill.
- 1,168,842. Pad for head rests with elastic tapes. B. Albrecht, New York, N. Y.
- 1,168,998. Finger stall tooth brush of rubber. C. K. Brandenburg, Klamath Falls, Ore.
- 1,169,085. Welt strip composed of rubber. O. C. Davis, assignor of one-half to G. E. Keith—both of Brockton, Mass.

THE UNITED KINGDOM.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent upon the filing of the application.

**Denotes Patents for American Inventions.*

- [ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 8, 1915.]
- 17,951 (1914). Rubber tipped blades to prevent escape of dust from scavenger's carts. A. F. Oates, 129 Royal Road, Kennington Park, London.
- 17,977 (1914). Rubber pad for preventing rattling of windows, etc. W. M. Still & Sons, and W. C. Still, 29 Charles street, Hatton Gardens, London.
- 18,046 (1914). Aviator's harness with elastic insertions. R. L. G. Marix, Royal Naval Flying School, Eastchurch, Kent.
- 18,138 (1914). Diver's helmet. A. B. Dräger, 53 Moislinger Allee, Lübeck, Germany.
- 18,274 (1914). Detachable rim. F. W. Brampton, Cookley, near Kidderminster, Worcestershire.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 15, 1915.]

18,398 (1914). Inner tube. Motorists' Purchasing Association and C. C. MacDowell—both of 170 Piccadilly, London.

- *18,411 (1914). Rubber type for printing upon pavement. W. J. Ryan, Sapulpa, Oklahoma.
- 18,451 (1914). Rubber bushing in connection with tank valves. H. Hartley, 215 Padiham Road, Burnley, Lancashire.
- 18,522 (1914). Lamp with rubber packing ring. H. Wade, 111 Hatton Garden, London.
- 18,525 (1914). Pneumatic tire with metallic inner tube. A. Cance, 129 Rue Lafayette, Paris.
- 18,544 (1914). Rim strip for pneumatic tires. G. W. Beldam, Boston Lodge, Ealing, and A. U. B. Ryall, Granville, Windmill Road, Brentford—both in Middlesex.
- 18,613 (1914). Elastic woven fabric for bandages and puttees. W. J. Teufel, 51, 189, Neckarstrasse, Stuttgart, Germany.
- 18,628 (1914). Self filling fountain pen. W. Shotton, 72 Lower Breck Road, Liverpool; W. Green, 12 Danehurst Road, Wallasey, Cheshire, and J. R. Green, 476 Stanley Road, Bootle, Lancashire.
- 18,644 (1914). Rubber tired vehicle wheels. W. H. Coward, Kelston, Somerset.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 22, 1915.]

- 18,732 (1914). Rubber tread for tram wheels. W. Baxter, 142 Newhaven Road, Leith, Scotland.
- *18,744 (1914). Machines for making package rolls of metal leaf comprising a rubber roller. L. M. Harwood, 958 State street, Springfield, Mass.
- 18,814 (1914). Valve capable of use as a tent or a bath. C. H. Gray, The India Rubber Works, Silvertown, Essex.

- 18,854 (1914). Rubber packing ring for tobacco pipes. J. Mason, Priory Road, Sale, Cheshire.

- 18,888 (1914). Artists' air brushes. S. H. C. Frankel, Trimulgherry, Deccan, India.

- 18,917 (1914). Spring wheel with continuous rigid ring and rubber ring and like cushion. W. S. Boulton, 11 Aberdeen Park, Highbury, London.

- 18,928 (1914). Rubber packing in holders for tin cans or boxes. S. C. Grant, 11 Hurst Road, Belvedere, Kent.

- 18,940 (1914). Waste plugs. A. B. Williams, 13 Weaman street, Birmingham.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 30, 1915.]

- 19,035 (1914). Twin rims. Rudge-Whitworth, Ltd., Crow Lane, Coventry, and J. V. Pugh, Guiting House, Allesley, Warwickshire.

- 19,079 (1914). Waterproof garments. R. H. Popplestone, 42 Queen's Road, Clifton, Bristol.

- 19,080 (1914). Respiratory apparatus with rubber attachments. R. H. C. Johnson, 161 High street, Scunthorpe, Lincolnshire.

- 19,100 (1914). Tire sleeve formed from a worn outer cover. F. Russell, 18 Alfred street, Milsom's Point, North Sydney, Australia.

- 19,204 (1914). Spring wheel with rubber tread blocks. R. Hamilton, Lilloet, British Columbia, Canada.

- 19,215 (1914). Detachable rim. R. S. Fawcett, 43a Rathbone Place, London.

- 19,256 (1914). Tire valve. D. Todd, 53 North Parade, Otley, Yorkshire.

- 19,370 (1914). Hat former comprising a rubber ring. J. Richard, 25 Rue Mélingue, Paris.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, DECEMBER 31, 1915.]

- *19,404 (1914). Life preserver. J. Depta, 127 Mercer street, Passaic, N. J.

- *19,442 (1914). Bottle stopper with rubber covered valve. E. Cummings, Royal Hawaiian Garage, Hotel street, Honolulu, Hawaii.

- 19,462 (1914). Valve with rubber washer. F. A. Jones, Wagga Wagga, New South Wales, Australia.

- 19,522 (1914). Vehicle wheel with rubber hub cushion. J. Riekie, 51 Tressillian Road, Brockley, London.

- 19,579 (1914). Pressure gage for tires. E. Ellis, Cobnar Works, Woodseats and Hattersley & Davidson, 139 Norfolk street—both in Sheffield.

- 19,647 (1914). Truss pad of rubber. H. C. Stephens, Cholderton, Wiltshire.

- *19,650 (1914). Fabric foundation for pneumatic tire casings. F. S. Dickinson, c/o J. R. Littell, 233 Broadway, New York.

- 19,699 (1914). Flexible wind screen for motor vehicles. E. H. Waller, Summerville, Nenagh, Tipperary, Ireland.

- 19,701 (1914). Manure and seed distributors with feed tubes of rubber. G. W. Gane, Normanby, Taranaki, New Zealand.

- 19,720 (1914). Wire reinforced pneumatic tire casing. M. Patrick, Geraldine, South Canterbury, New Zealand.

THE FRENCH REPUBLIC.

PATENTS ISSUED (With Dates of Application).

- 477,110 (December 18, 1914). Armor for inner tube or casing of pneumatic tires. G. Mieli and E. Bartoli.
- 477,350 (June 11). Puncture proof inner tube. G. Frétard.
- 477,358 (May 23). Tires and process of manufacture. J. Cairns.
- 477,368 (September 26). Improvements in pneumatic tires. F. S. Dickinson.
- 477,050 (January 7, 1915). Improved anti-skid devices. Neverskid Manufacturing Co.
- 477,410 (January 27). Improvements in tires. J. H. Knight.
- 477,463 (February 1). Improvement in dual-tire wheels. Wolseley Motors, Limited.

THE GERMAN EMPIRE.

PATENT ISSUED (With Date of Validity).

- 289,382 (March 22, 1914). Hard rubber syringe with a hollow piston open at both ends. Dr. Vittorio Emanuele Malato, Milan, Italy. B. Wassermann, Berlin SW 68. Patented in Italy, October 31, 1913, M. 55,573.

TRADE-MARKS.

ISSUED DECEMBER 14, 1915.

- 86,091. C. Milton, Los Angeles, Cal. The word *Miltonite*. For a composition of matter for preventing and sealing punctures in pneumatic tires.
- 87,177. Wright & Ditson, Jersey City, N. J., and Boston, Mass. Representation of a man standing on a ball with a tennis racket in his hand. For golf, tennis and gymnasium shoes, diving and swimming caps, waterproof bathing suits, etc.
- 88,713. C. L. Meyer, Pittsburgh, Pa. The word *Keystone*. For garters, armbands and trouser belts.
- 89,326. M. F. Robbins, Rudolph, Wis. Illustration of an elm tree with the words *Elm Curve Brand*. For ladies' garters.
- 90,083. Glendale Elastic Fabrics Co., Easthampton, Mass. Illustration of a seal with the words *French Model American Made*. For suspenders.
- 90,296. The Vulcanized Rubber Co., New York, N. Y. The word *Leonora*. For toilet combs made of rubber or composition.
- 90,511. The Goodyear Tire & Rubber Co., Akron, Ohio. The word *Neolite*. For soles and heels for boots and shoes, formed of an artificial composition.

ISSUED DECEMBER 21, 1915.

- 88,953. Foster Rubber Co., Kennebunk, Me., and Boston, Mass. Picture of a cat. For rubber heels.
- 88,954. Foster Rubber Co., Kennebunk, Me., and Boston, Mass. Picture of a cat. For rubber heels.
- 88,955. Foster Rubber Co., Kennebunk, Me., and Boston, Mass. The words *The Heel With Nine Lives*. For rubber heels.
- 89,935. Vaughan Rubber Co., Detroit, Mich. Illustration of a heel with the initials *R V P*. For rubber heels.
- 90,096. National Hoof Pad Co., Brooklyn, N. Y. The word *Vic*. For rubber pads for horses' hoofs.
- 90,188. National India Rubber Co., Bristol, R. I. The word *Emmy-Lou*. For rubber and canvas shoes, boots and slippers.
- 90,189. National India Rubber Co., Bristol, R. I. The words *Sister Sue*. For rubber and canvas boots, shoes and slippers.
- 90,497. Bishop Gutta-Percha Co., New York, N. Y. Illustration of an Indian's head. For backing cloth, sometimes called plumping cloth.
- 90,546. Simplex Wire & Cable Co., Boston, Mass. The word *Fibrex*. For electric wire and cables, insulated wire and woven covered wire and cables for electrical use.
- 90,947. W. F. Mayo & Co., Boston, Mass. The word *Whip*. For rubber and rubber and canvas boots and shoes.

ISSUED DECEMBER 28, 1915.

- 90,657. Mishawaka Woolen Manufacturing Co., Mishawaka, Ind. The word *Lura*. For light weight rubber shoes.
- 90,658. Mishawaka Woolen Manufacturing Co., Mishawaka, Ind. The word *Okay*. For rubber shoes.

ISSUED JANUARY 4, 1916.

- 72,390. Bourn Rubber Co., Providence, R. I. Representation of the bottom of a shoe. For rubber boots and shoes.
- 81,938. The Gordon Rubber Co., Canton, Ohio. Representation of a triangle. For rubber tubes and tires.
- 82,130. C. A. Daniel, Philadelphia, Pa. Illustration of a diamond design with the words *Daniel's Ebonite* in white letters on a black background. For rubber machinery packing.
- 89,444. E. T. Packard, Avon, Mass. Illustration of two shells. For rubber heels.
- 89,734. Lambertville Rubber Co., Lambertville, N. J. The word *Redskin*. For rubber boots and shoes.
- 90,176. W. H. Horn & Bro., Inc., Philadelphia, Pa. Illustration of a diamond design. For trusses, supportera, surgical belts, elastic stockings, etc.
- 90,332. Harris & Bernitz Co., Philadelphia, Pa. The words *Prevents Colic* in red letters on a black background. For nursing bottle nipples.
- 90,344. McFadden Bros., Wheeling, W. Va. Pictures of three little boys holding a plate with the words *Three Brothers*. For shoes and boots of leather and rubber, rubberized and oiled waterproof clothing, etc.
- 90,410. The Goodyear's Metallic Rubber Shoe Co., Naugatuck, Conn. The word *Unisa*. For teething rings, rubber beard softeners and rubber complexion cloths.
- 90,412. The Goodyear's Metallic Rubber Shoe Co., Naugatuck, Conn. The word *Nangahyde*. For foot balls and basket balls.

ISSUED JANUARY 11, 1916.

- 90,157. Spotless Co., Inc., Richmond, Va. The word *Spotless*. For rubber roofing.
- 90,549. Abercrombie & Fitch Co., New York, N. Y. The initials *A F & Co*. For tents, ground cloths and rubber blankets, etc.
- 90,960. Standard Underground Cable Co., Pittsburgh, Pa. Illustration of a cable. For electric cables.
- 87,178. Wright & Ditson, Boston, Mass. Illustration of a man standing on a ball with a tennis racket in his hands. For golf and tennis balls and sporting goods.
- 88,812. A. V. Osterhout, Port Washington, N. Y. The word *Everywoman's*. For ladies' shoes of leather, rubber, etc.
- 90,165. Automobile Tire Co., Inc., New York, N. Y. The word *Nomad*. For rubber pneumatic automobile tires and tubes.

DESIGNS.

ISSUED DECEMBER 21, 1915.

- 48,341. Auto pedal pad. J. Winkler, assignor to Auto Pedal Pad Co.—both of New York, N. Y.

ISSUED DECEMBER 28, 1915.

- 48,348. Vehicle tire. H. G. Ellis, assignor to Hood Rubber Co.—both of Watertown, Mass.

ISSUED JANUARY 4, 1916.

- 48,374. Tire. G. W. Greene, assignor to Ten Broeck Tyre Co.—both of Louisville, Ky.

ISSUED JANUARY 11, 1916.

- 48,427. Miner's shoe. J. T. Crowley, Beacon Falls, Conn., assignor to The Beacon Falls Rubber Shoe Co., a corporation of Massachusetts.
- 48,438. Miner's shoe. J. T. Crowley, Beacon Falls, Conn., assignor to The Beacon Falls Rubber Shoe Co., a corporation of Massachusetts.

ISSUED JANUARY 18, 1916.

- 48,473. Elastic fabric. C. A. Lipworth, West Bridgewater, assignor to The Lapworth Webbing Co., Brockton—both in Massachusetts.

THE RUBBER SCRAP MARKET.

THE sensational advance in the price of crude rubber has promptly reflected in the January rubber scrap market and prices developed substantial gains in the entire list. The break in crude rubber prices that occurred early in the month will doubtless be followed by a reaction in shoddy and values will eventually decline in sympathy with the crude material.

The scarcity of all grades of stock has been a dominating feature of the market that is generally conceded to be of the dealer's making, and the mills have refused to buy largely at the higher level now prevailing.

Boots and shoes lead the activity that began about the middle of the month and prices sought new levels supported by the prevailing "bullish" sentiment. Quotations were firm at 10¼@11 cents and few sales reported, due to the unsettled conditions; however, several orders were taken at 11¼ cents.

Auto tires advanced strongly with G and G tires leading. Sales were reported at 8½ cents. However, quotations were made at figures close to 9 cents for mill delivery.

Under advancing prices inner tubes developed a speculative following that supported the market firmly at 29 to 30 cents for No. 1 tubes.

Later in the month the market experienced an unsettled feeling, attributed to the recent break in crude prices, and in consequence there was less speculative buying. Consumers came forward about this time for supplies of boots and shoes and sales were made at 11¼ cents delivered.

The market for tires continued to be active, but prices in certain grades had shown considerable weakness. During the last week G and G tires were selling for 8¾ cents and standard white tires were weak at 6½ cents.

In mechanical scrap there has been little change other than the price advances recorded in the following list.

NEW YORK QUOTATIONS FOR CARLOAD LOTS DELIVERED.

January 29, 1916.

	Per Pound.
Boots and shoes	\$0.11¼ @ .11½
Trimmed arctics .....	.09 @ .09½
White tires, Goodrich and Goodyear .....	.08¾ @ .09
Auto tires, standard white .....	.06½ @
Auto tires, standard mixed .....	.06½ @
stripped, unguaranteed .....	.04 @
Auto peelings, No. 1 .....	.09½ @ .10
No. 2 .....	.08 @ .08½
Inner tubes, No. 1 .....	.29 @ .30
No. 2 .....	.12¾ @ .13
red .....	.14¼ @ .14½
Irony tires .....	.02½ @ .02¾
Bicycle tires .....	.03¾ @ .04
Solid tires .....	.05 @ .05¼
White scrap, No. 1 .....	.13 @ .14
No. 2 .....	.10 @ .11
Red scrap, No. 1 .....	.09½ @ .10½
No. 2 .....	.07½ @ .07¾
Mixed black scrap, No. 1 .....	.03¾ @
No. 2 .....	.03½ @
Rubber car springs .....	.03¾ @
Horse shoe pads .....	.04¼ @ .04½
Mattings and packings .....	.01 @ .01½
Garden hose .....	.01½ @
Air brake hose .....	.05¼ @
Cotton fire hose .....	.02½ @
Large hose .....	.01½ @
Hard rubber scrap, No. 1, bright fracture .....	.24 @
Battery jars (red compound) .....	.02½ @
Insulated wire stripping .....	.03 @
rubber heels .....	.03¾ @

A NEW BLOW-OUT PATCH.

A new inside blow-out patch, manufactured by the Polson Rubber Co., Kansas City, Missouri, encircles completely the tire tube and is fastened by a special self-adjusting strap. It is claimed that when the tube is inflated, the patch expands at its ends and tightens in its center, thus preventing pouching and the consequent enlargement of the hole in the casing. Such a patch can be used for rim cuts as well as for side blow-outs.

Crude Rubber During 1915.

THE crude rubber market for the year 1915 opened in a most unsatisfactory condition, with the British embargo in force and uncertainty existing as to whether the United States would be able to secure its necessary supply. In New York there were small stocks on hand. With prices steady and fewer buyers, the manufacturers kept out of the market for fear that any buying movement would force prices up, and a feeling of hopefulness existed that the negotiations to have the embargo lifted would result favorably.

The year began with First latex crêpe selling at 86 to 87 cents and Upriver fine at 75 cents a pound. On January 8 cabled information was received that rubber could be shipped to New York subject to special guarantees, and prices declined from then to the end of the month, when both First latex crêpe and Upriver fine were quoted at 60 to 61 cents a pound. The first crude rubber reaching New York after the lifting of the embargo was 200 tons that arrived on the "Lusitania" on January 23. At the end of the month much rubber was afloat, including 2,500 tons from England.

February opened with demand from manufacturers light, but with plantation rubber arriving regularly and with ample supplies in London to draw on. Shipments from Brazil were also coming in steadily. During March, delayed shipments, partially due to the London dock strike, tended to limit trading, and manufacturers were not attracted by the low price of Upriver fine, which had dropped to around 58 cents. The general impression prevailed that there was plenty of rubber for everybody and nobody seemed anxious to invest.

In May a lively interest developed and considerable business was done, owing largely to the desire of manufacturers to stock up in anticipation of possible political disturbances that might result in cutting off the supply. The buying movement, however, soon ceased. Although most rubber being imported was sold before it arrived, The Rubber Club of America, Inc., agreed to handle and release such shipments as might arrive unsold and to sign the usual guarantee.

During June, arrangements were completed by which plantation rubber might be shipped to any Atlantic port of the United States, consigned to the British consul, the usual form of guarantee being required and passed upon by the Rubber Club. Arrangements were also perfected by which shipments to Pacific ports could be consigned to the British consul at San Francisco and cleared in the same manner as those at Atlantic ports.

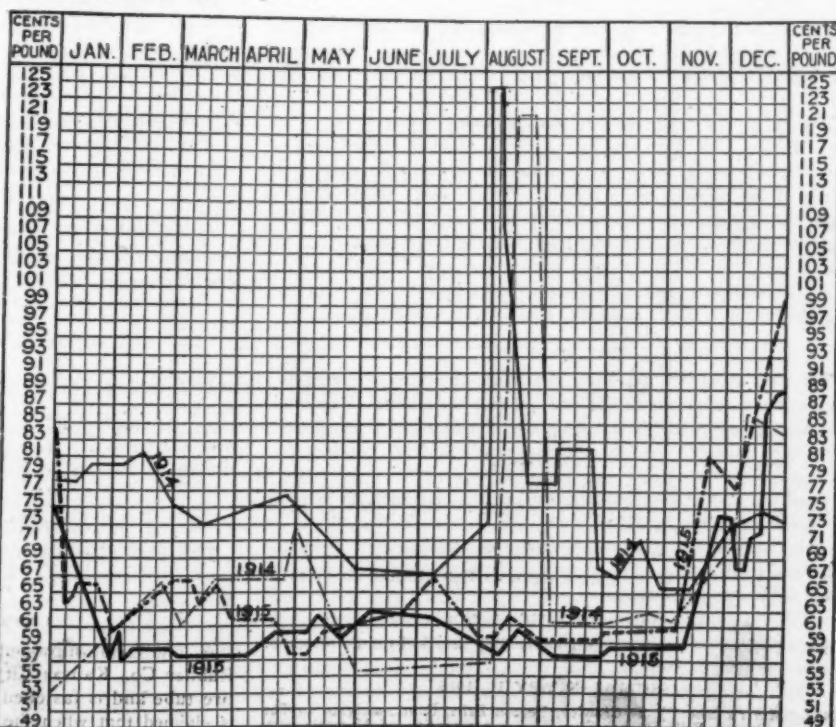
Prices had gradually advanced, with the ordinary fluctuations, until July opened with First latex crêpe at 63 cents and Upriver fine at 62½ to 63 cents. The market evidenced slowness in New York, but the price reflected the strong position of plantation in the London market. Beginning with August a general downward tendency manifested itself, due to plentiful supplies and

unstable conditions of foreign exchange, and on October 1, First latex crêpe was quoted at 59½ to 60 cents and Upriver fine at 56 to 57 cents a pound.

The most interesting movement commenced on November 6, when heavy buying in London was reported, and prices began to soar. On November 11 quotations were withdrawn, and on November 23, First latex crêpe and prime ribbed sold at 85 cents in a strong market and Upriver fine at 76 cents spot. Real buying was done at these advanced prices, which were generally credited with being influenced by the closing of the Suez and Panama canals and the submarine activity in the Mediterranean. During the last week of the month prices weakened considerably.

December, which will long be remembered for its spectacular rise in prices, opened with First latex crêpe at 75 cents and Upriver fine at 68 cents a pound. Before the month ended, the former advanced 25 cents and the latter 20 cents a pound. With prices steady and a strong market, rapid advance was made when cables brought the news of the sinking of the "Langton Hall" in the Mediterranean with 500 tons of rubber aboard. Encouraged by heavy buying in London, the upward price movement continued as the month progressed, higher prices being quoted almost daily. The news that two rubber ships had been routed around the Cape instead of by the Suez Canal encouraged the upward movement.

On the last day of the year the prediction of "dollar rubber" was realized, for First latex crêpe sold at that price, and Upriver fine at 87 and 88 cents a pound. The local December market has been characterized as a creation of dealers, but it is understood that manufacturers needed stock and bought at high prices.



Compiled by the Gould Commercial Co., New York.
 1915. UPRIVER FINE ——— 1914. UPRIVER FINE ———
 FIRST LATEX CRÊPE - - - - - FIRST LATEX CRÊPE - - - - -
 Chart showing fluctuations in Para and Plantation rubber for two years—Spot prices.

SUMMARY OF NEW YORK RUBBER PRICES.

1915.	Upriver.		Islands.		Cametá.
	Fine.	Coarse.	Fine.	Coarse.	
January	\$0.61@0.75	\$0.45@0.58	\$0.53@0.70	\$0.29@0.37	\$0.31@0.41
February .....	.57@.61	.44@.48	.50@.54	.28@.32	.30@.36
March .....	.58@.60	.45@.47	.51@.53	.30@.32	.34@.37
April .....	.57@.60	.46@.48	.52@.55	.30@.33	.33@.37
May .....	.59@.61	.45@.46	.52@.54	.29@.31	.32@.34
June .....	.61@.63	.45@.47	.52@.55	.29@.31	.31@.33
July .....	.59@.63	.44@.47	.52@.54	.28@.30	.31@.32
August .....	.56@.59	.42@.44	.50@.52	.27@.28	.29@.31
September .....	.55@.57	.41@.43	.49@.51	.26@.27	.28@.30
October .....	.55@.57	.42@.45	.50@.54	.26@.28	.28@.29
November .....	.57@.76	.44@.62	.54@.67	.27@.34	.29@.36
December .....	.68@.87	.57@.72	.65@.80	.32@.43	.35@.48

AVERAGE PRICES.

1915.	\$0.61 3/4	\$0.47 1/4	\$0.55 1/4	\$0.30 1/4	\$0.33 1/4
1914.	.73 3/4	.47 1/2	.63 3/4	.31 1/4	.35 1/4
1913.	.87 1/2	.58	.79 1/2	.36 3/4	.42
1912.	1.11 1/4	.89 1/2	1.05 1/4	.59	.63 3/4
1911.	1.18 1/4	.95	1.10 1/4	.64	.70 1/2
1910.	2.01 1/4	1.36 1/4	1.89 3/4	.90	1.00

UNITED STATES AND CANADA CRUDE RUBBER STATISTICS FOR 1915.

Month.	Imports.					Ex. ports.	Re-tained.
	Pará.	Plan-tation.	Afri-cans.	miscel-laneous.	Totals.	Totals.	Totals.
January	2,673	4,084	102	758	7,617	226	7,391
February	1,980	4,472	274	692	7,418	334	7,084
March	2,452	5,371	260	829	8,912	254	8,658
April	2,788	6,728	240	810	10,566	167	10,399
May	1,454	5,713	208	628	8,003	92	7,911
June	2,043	4,828	189	798	7,858	178	7,680
July	1,800	4,785	277	620	7,482	107	7,375
August	2,099	4,857	212	783	7,951	110	7,841
September	2,550	4,840	208	714	8,312	335	7,977
October	1,820	3,329	134	633	5,916	200	5,716
November	1,912	3,635	253	643	6,443	185	6,258
December	2,729	5,485	343	762	9,319	160	9,159
Totals	26,300	58,127	2,700	8,670	95,797	2,348	93,449

Compiled by Gould Commercial Co.

THE LONDON VIEW OF THE 1915 MARKET.

DURING the year that has just closed the use of rubber has increased beyond all expectations, due in large measure to the heavy demands for military purposes and to the large number of automobile tires turned out by American manufacturers.

The supply of crude rubber has increased about 22 per cent. over that of 1914, thus making the great gain in manufacturing possible. Estimates show that plantations now supply about two-thirds of the world's crude rubber. Of the year's production, as estimated by leading authorities, at between 144,750 and 147,000 tons, 98,000 tons, or about two-thirds of the total, came from the plantations. In 1914 the total production was 120,380 tons, of which 71,380 were plantation grades. Back in 1910, six years ago, the plantations yielded but 8,200 tons of the world's supply.

THE MARKET.

The year's market has been dominated largely by emergency regulations arising out of the unusual war conditions. The trade has been chiefly with the neutral countries and strict precautions have been taken to prevent the raw material from reaching the enemy.

Until the middle of September the market presented no features of striking interest. About that time, however, fear began to be felt that there might be a shortage of tonnage both from the East and to America. The situation of the canals also excited no small influence on conditions.

In December speculators who had oversold near delivery rubber, quickly covered their requirements in part and advanced prices 1s. per pound, 3s. 7 1/2d. being paid for pale crêpe and 3s. 6 1/2d. for ribbed smoked sheet. After a rapid decline of 7d. per pound prices again were forced up to 4s. 1d. and 4s., many interested in sales being frightened about obtaining freights for their rubber contracts.

Manufacturers and speculators bought freely for distant delivery and large sales for 1916 were made. The market closed

with crêpe at 4s. 1d. and sheet at 4s., an advance on a year ago of 1s. 6d. to 1s. 9d. on spot and near. Pará, which is much less speculative, closed at 3s. 9d. for fine hard.

Estimates place £16,000,000 as the value of the enormous quantity of rubber that was shipped to the United States during 1915. This should serve as some indication of the abounding prosperity in America.

The following table shows the production of crude rubber for the last three years:

THE WORLD'S PRODUCTION.

	1915.	1914.	1913.
Ceylon and India.....tons	20,600	14,800	11,830
Malaya, etc.....	72,800	49,700	36,200
Amazonas (Brazil, Bolivia and Peru)....	30,700	28,345	29,380
Peruvian and Caucho.....	6,800	8,655	9,620
West Coast, Africa.....	2,500	2,650	3,900
Benguela and Mossamedes.....	1,900	1,500	1,300
Loanda	600	450	400
Congo, French Congo and Soudan.....	3,000	3,900	4,400
From other sources.....	7,100	10,380	11,410
Totals	146,000	120,380	108,440

Wild rubber has decreased, although Brazil has sent an average supply. The Pará and Manáos markets were not controlled, as in some former years, and showed but little speculation. Prices have not been maintained relatively to plantation rubber, but the entire Brazilian supply has been readily taken by consumers. The following closing prices for recent years may be of interest:

	Hard	Negrohead	Negrohead	Caucho
	Fine Pará.	Scrappy.	Island.	Ball.
1913	3s. 1 1/2d.	2s. 6d.	1s. 5d.	1s. 11d.
1914	2s. 10 1/2d.	2s. 1 1/2d.	1s. 3d.	2s. 4d.
1915	3s. 9d.	2s. 10d.	1s. 7d.	3s.

The lowest price at which hard fine Pará was sold during 1915 was 2s. 4 1/2d. and the highest 3s. 9d.

The South American exports of medium grade have fallen off considerably. The supply of Caucho Ball shows a heavy decrease, with price relatively high. Bolivia sent a fair quantity; Mollendo and Venezuela, via Orinoco, very little, and Ceara and Manicoba rather less. Matto Grosso shipped a fair crop. The supply from Mexico was very small. Good qualities of West Coast African grades have sold well, but the yield shows decline. English and German East Africa sent but little.

PLANTATION RUBBER.

It is said that any planting which may have been done in 1915 has been fully counteracted by the falling out of cultivation and the thinning of some of the previously planted areas. The following estimate shows the acreage of the chief plantations from 1913 to 1915:

	1913.	1914.	1915.
Ceylon	220,000	220,000	235,000
Malaya, Malacca	500,000	500,000	550,000
Borneo	20,000	20,000	25,000
Dutch East Indies, Java, Sumatra, etc....	400,000	400,000	450,000
India and Burma	45,000	65,000	60,000
German colonies, Samoa, East and West Africa	60,000	40,000	25,000
Totals	1,245,000	1,245,000	1,345,000

The plantations, principally of *Castilloa*, in Mexico, West Indies and Central and South America have not progressed and have yielded insignificant supplies. India, Burma and the Mergui have increased and are extending, but the East African plantations of Ceara have sent but little.

The following table shows the annual receipts and shipments at Pará during the years 1913 to 1915:

	1913.	1914.	1915.
Receipts of Pará.....tons	29,750	28,170	30,595
Receipts of Peruvian.....	9,620	8,655	6,800
Shipments of Pará and Peruvian to Europe.	22,110	15,985	14,440
Shipments of Pará and Peruvian to America	17,050	21,690	29,960

DISTRIBUTION.

The consumption of crude rubber of the various grades has been estimated as follows:

	1913.	1914.	1915.
England	18,000	18,000	24,000
Germany, Austria, etc.....	16,600	16,430	3,000
France	9,000	5,000	7,000
Russia	11,500	11,610	16,000
Italy, etc.....	1,370	4,000	2,500
Japan and Australia.....	2,000	2,400	4,000
America and Canada.....	47,200	62,940	89,500
Totals	105,670	120,380	146,000

It is interesting to note the great increase of the demands made by the United States, England, Russia, Japan and Australia and the great curtailment in the supply that went to the Teutonic nations.

[The figures and information used in the above review have been supplied by S. Figgis & Co.; Gow, Wilson & Stanton, Limited, and W. H. Rickinson & Son, all of London.]

FEDERATED MALAY STATES RUBBER EXPORTS.

A cablegram from the Government to the Malay States Information Agency gives the exports of plantation rubber from the Federated Malay States for the month of December as 5,111 tons, compared with 4,636 tons in November and 3,361 tons in the corresponding month last year.

Appended are the comparative statistics for three years:—

	1913.	1914.	1915.
January	2,131	2,542	3,473
February	1,757	2,364	3,411
March	1,737	2,418	3,418
April	1,626	2,151	2,777
May	1,225	2,069	2,708
June	2,005	2,306	3,403
July	1,781	2,971	3,687
August	2,363	1,850	3,796
September	2,000	2,879	3,984
October	2,160	2,897	4,120
November	2,062	2,889	4,636
December	2,618	3,361	5,111
Totals	23,465	30,697	44,524

From these statistics it will be seen that December establishes a new record for monthly export, eclipsing the November export (the previous best) by no less than 475 tons and being only 341 tons below the total export for the year 1910. The total for the year is also a record, surpassing last year's total by 13,827 tons. For the sake of comparison it is interesting to record the aggregate export of plantation rubber from the Federated Malay States for the past seven years:—1909, 2,641 tons; 1910, 5,452 tons; 1911, 6,792 tons; 1912, 15,506 tons; 1913, 23,465 tons; 1914, 30,697 tons; 1915, 44,524 tons.

EXPORTS OF INDIA RUBBER AND CAUCHO FROM PARÁ, MANAOS, IQUITOS AND ITACOATIARA IN 1915, AND FOR EIGHTEEN YEARS.

[The figures indicate weights in kilograms.]

EXPORTERS.	NEW YORK.					EUROPE.					GRAND TOTAL.
	Fine.	Medium.	Coarse.	Cauchó.	TOTAL.	Fine.	Medium.	Coarse.	Cauchó.	TOTAL.	
J. Marques	429,019	339,058	1,147,586	426,531	2,342,531	1,875,702	41,752	189,453	171,626	2,278,533	4,620,727
Suter & Co.	893,797	133,437	875,742	393,448	2,296,424	415,358	46,540	28,596	161,548	652,042	2,948,466
Adelbert H. Alden, Limited.	71,862	52,588	110,344	26,936	261,730	886,275	72,145	61,730	160,667	1,180,817	1,442,547
General Rubber Co. of Brazil.....	1,848,164	151,295	1,112,541	587,932	3,699,932	893,558	96,499	57,161	50,191	1,097,409	4,797,341
Pires Teixeira & Co.	518,208	50,691	990,815	264,965	1,824,679	499,496	46,021	18,759	42,154	606,430	2,431,109
Zarges, Berringer & Co.	271,879	14,574	34,187	72,970	393,610	.....	.....	.....	.....	.....	393,610
Seligmann & Co.	336,787	340	28,863	175,605	541,595	18,042	.....	923	379	19,344	560,939
Suárez Hermanos & Co.	706,827	6,661	105,181	109,778	928,447	524,975	35,790	113,801	674,566	1,603,013	3,563,932
Stowell Brothers .....	.....	2,550	1,320	156	4,026	209,569	15,559	43,940	62,204	331,272	335,298
G. Fradelizi & Co.	11,050	510	6,930	.....	18,490	.....	.....	.....	.....	.....	18,490
Sundries	462,688	35,122	308,818	226,409	1,033,037	247,088	19,155	40,572	55,605	362,420	1,395,457
Exports from Pará.....	5,550,281	786,826	4,722,327	2,284,730	13,344,164	5,570,063	337,671	476,924	818,175	7,202,833	20,546,997
Manaos	4,127,611	566,840	1,627,351	1,360,960	7,682,762	4,526,213	669,347	469,097	1,127,489	6,792,346	14,475,108
Iquitos	464,605	28,448	168,594	770,306	1,431,953	516,609	60,709	117,262	417,352	1,111,932	2,543,885
Itacoatiara	29,780	1,800	15,610	13,200	60,390	41,978	1,905	21,563	13,874	79,320	139,710
Totals, 1915	10,172,277	1,383,914	6,533,882	4,429,196	22,519,269	10,654,863	1,069,832	1,084,846	2,376,890	15,186,431	37,705,700
1914	9,972,494	1,677,762	5,645,917	4,389,925	21,686,098	9,071,232	1,114,999	1,461,862	4,385,981	16,034,074	37,720,172
1913	7,223,363	1,354,794	5,324,881	3,198,077	17,101,115	11,749,008	1,591,241	2,456,162	6,338,207	22,114,618	39,215,733
1912	9,477,888	2,035,278	6,503,631	3,337,691	21,354,488	12,570,242	1,414,572	2,822,694	5,200,397	22,007,905	43,362,393
1911	7,686,680	1,571,375	5,173,230	1,669,596	16,100,881	11,230,371	1,503,869	2,504,439	4,519,039	19,757,718	35,858,599
1910	7,500,410	1,412,311	4,489,108	1,658,661	15,060,490	11,673,302	1,506,752	3,382,432	6,416,842	22,979,328	38,039,818
1909	9,439,722	1,767,310	5,784,170	2,655,778	19,646,980	9,832,613	1,372,221	2,950,626	5,649,763	19,805,223	39,452,203
1908	8,280,768	1,739,505	5,616,549	1,902,620	17,539,442	10,721,266	1,419,025	2,854,624	5,528,994	20,523,909	38,063,351
1907	8,012,592	1,863,775	5,149,312	1,580,657	16,606,336	10,783,787	1,338,064	3,190,982	5,574,783	20,907,816	37,514,152
1906	7,406,171	1,785,315	5,496,419	1,531,399	16,192,304	9,289,310	1,253,574	3,223,944	4,799,623	18,575,451	34,767,755
1905	7,173,463	1,518,444	4,921,222	1,647,216	15,260,345	10,052,634	1,291,703	2,498,516	4,363,690	18,656,543	33,916,888
1904	8,062,104	1,630,355	5,394,429	1,222,580	16,309,468	7,615,817	993,955	2,503,520	3,221,376	14,334,668	30,644,136
1903	7,248,065	1,621,827	5,029,646	1,133,857	15,033,395	9,156,872	1,167,956	2,659,748	3,076,971	16,061,547	31,094,942
1902	6,588,524	1,614,776	4,523,413	1,133,155	13,859,868	8,522,521	1,514,521	2,595,177	2,057,222	15,689,912	28,549,780
1901	8,027,727	1,926,505	4,271,456	1,325,290	15,550,978	7,939,010	1,556,358	2,605,553	2,638,599	14,739,520	30,290,498
1900	6,557,277	1,199,611	3,783,279	894,500	12,434,667	7,798,537	1,401,390	3,256,969	1,857,100	14,313,996	26,748,663
1899	7,583,405	1,319,349	4,023,710	951,854	13,878,318	6,410,647	1,030,459	2,527,013	1,583,572	11,551,691	25,430,009
1898	5,399,654	868,982	2,759,714	801,915	9,830,265	6,794,541	1,125,688	2,995,801	1,162,712	12,078,742	21,909,007

Review of the Crude Rubber Market.

NEW YORK. JANUARY 29, 1916.

THE steady advance in crude rubber that commenced in November continued in the beginning of January and recorded prices that had not been equaled since the spectacular advance in August, 1914. First latex had gained 5 points since December 31 and on January 4 was selling at \$1.05 for spot and near by. Futures were quoted at \$1.04 for January-June and 99 cents for July-December.

Small stocks were responsible for the firm tone in Upriver fine, which had continued to advance steadily with plantations, and sales were reported at \$1 on January 4.

It was clearly evident that the market was top heavy and fundamentally lacking in permanent support from the large buyers. Local dealers realized the speculative character of the situation caused by the uncertainty of arrivals due to the many difficulties surrounding transport service. The reported sinking of two steamers, rubber laden, from the Far East and damage by

fire of another, gave added support to the bullish influence that prevailed in the market.

Despite the artificial support that was given to the already weakening market by speculative interests in London, the decline commenced on January 7 and continued steadily downward in a generally quiet market until January 29, when First latex was quoted at 78 cents and Upriver 76 cents.

The report that Great Britain had decreed that henceforth all shipments should be routed by the way of London cannot be verified. It is obvious that the best interests of England are greatly concerned in obtaining as little interruption as possible in her advantageous rubber trade with the United States. The imports received at the port of New York for the first 17 days of January would apparently indicate a greater tonnage for this month than that of December.

The arrivals will be found in detail in the following pages and in round numbers the totals are as follows: Plantation Pará,

3,700 tons; Pará from Pará and Manaos, 700 tons; Pará from Europe, 51 tons; Africans, 300 tons; Centrals, 150 tons; Manicoba and Caucho, 200 tons. From these incomplete figures an estimate of 10,000 tons will represent the New York imports for January. Incidentally 90 per cent. of the total United States rubber imports are received at New York.

LONDON.

The first week of January witnessed a four shilling market and an insistent demand for spot rubber. Inquiries were sufficient to carry prices to higher levels and were steady on January 7, with First latex spot selling for 4s. 3¼d. Futures were quoted at 4s. 3d. for April-June deliveries.

Delay in issuing permits continues. Applicants who pad up their figures in order to obtain the release of more rubber than they are entitled to receive would prevent delay by making an honest statement of their requirements. This applies to permits for shipments from the Far East as well as London and Liverpool.

That Great Britain has no intention of impeding shipments to neutral countries is evidenced by the recent order concerning government regulation of cargoes. Necessities are to be given preference over luxuries and rubber is classed as a necessity.

Weakness developed in the market about the middle of this month and prices gradually declined with minor fluctuations until January 29, when First latex was quoted at 3s. 1d. to buyers.

PARA AND MANAOS.

The Federal tax on exports from Brazil has been reduced to 12 per cent, taking effect January 1. The state tax on exports from the state of Matto Grosso has been reduced from 15 to 14 per cent., taking effect on the same date.

RUBBER AFLOAT.

The following formidable fleet of rubber carriers are afloat from the Far East: "Merton Hall," "St. Bede," "Inverclyde," "Suruga" and "Kathlamba." "The Saxon Monarch" and the "Kentigern" are due early in February from London. It is estimated that 2,000 tons will arrive on these steamships.

That rubber is being shipped from Singapore by the way of Hong Kong, China, and Kiobe, Japan, to Pacific ports, whence it is forwarded by rail, is a well known fact in the trade.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and January 29, the current date:

PARA.	Feb. 1, '15.	Jan. 1, '16.	Jan. 29, '16
Upriver, fine, new.....	60 @ 61	87 @ 88	76 @
Upriver, fine, old.....			
Islands, fine, new.....	53 @	80 @ 81	69 @
Islands, fine, old.....			
Upriver, coarse, new.....	44 @ 45	72 @ 73	54 @
Upriver, coarse, old.....			
Islands, coarse, new.....	28 @ 29	45 @ 46	35 @
Islands, coarse, old.....			
Cameta.....	32 @ 33	49 @ 50	37 @
Caucho, ball, upper.....	45 @ 46	75 @	59 @ 61
Caucho, ball, lower.....	40 @ 41	73 @	56 @

PLANTATION HEVEA.

Smoked sheet ribbed..	{ Spot 65@66 Prompt shpt. 60@61 }	99 @ 1.00	78 @
First latex crepe.....	{ Spot 60@61 Prompt shpt. 56@57 }	99 @ 1.00	78 @
Fine sheets and biscuits, un-smoked		Unobtainable	78 @

CENTRALS.

Corinto.....	42 @ 43	69 @	55 @ 56
Emeralda, sausage.....	42 @ 43	68 @	54 @ 55
Nicaragua, scrap.....	41 @	68 @	53 @ 54
Mexican plantation, sheet.....		75 @	60 @ 61
Mexican, scrap.....		67 @ 68	53 @ 54
Mexican, slab.....			35 @ 36
Manicoba.....		55 @ 57	45 @ 46
Mangabeira, sheet.....	37½ @ 40	47½ @ 50	35 @ 38
Guayule.....	29 @ 30	48 @	41 @ 42
Balata, sheet.....	53 @	57 @	46 @
Balata, block.....	42 @	45 @	

AFRICAN.

Lopori, ball, prime.....	58 @		
Lopori, strip, prime.....	58 @		
Upper Congo, ball, red.....			

Rio Nunez Niggers.....			72 @
Conakry Niggers.....			76 @ 77
Massai, red.....			71 @ 72
Soudan Niggers.....			
Cameroon, ball.....	43 @		
Benguela No. 2.....		50 @ 51	40 @ 41
Accra, flake.....		48 @ 50	40 @

EAST INDIAN.

Assam.....				
Pontianak.....	7¼ @ 8	7¼ @ 7½	8¼ @ 8½	
Gutta Siak.....		12 @ 13	13 @ 13½	
Borneo III.....		34 @	35 @ 35½	
Gutta Percha.....			1.50 @ 2.00	

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, New York City), advises as follows: "Just around the turn of the year there was not much demand for paper for a few days, but since then it has picked up again, with a good market for the best rubber names at 4@4½ per cent, and those not so well known at 4¼@5½ per cent, about the same as in December." Mr. Beers supplied the following statistical tables, which are of interest:

NEW YORK PRICES FOR DECEMBER (NEW RUBBER).

	1913.	1914.	1915.
Upriver fine.....	\$0.72@0.76	\$0.70@0.76	\$0.68@0.87
Upriver coarse.....	.44 @ .47	.51 @ .58	.57 @ .72
Islands fine.....	.59 @ .66	.59 @ .70	.65 @ .80
Islands coarse.....	.27 @ .30	.31 @ .38	.32 @ .45
Cameta.....	.35 @ .37	.34 @ .41	.35 @ .48

Plantation Rubber from the Far East.

EXPORTS OF CEYLON GROWN RUBBER.

(From January 1 to December 13, 1914 and 1915. Compiled by the Ceylon Chamber of Commerce.)

To—	1914.	1915.
Great Britain.....pounds	19,564,359	22,895,044
United States.....	9,175,991	17,856,681
Belgium.....	2,984,009	
Germany.....	1,037,415	
Australia.....	619,175	844,977
France.....	320,152	559,202
Japan.....	269,014	262,661
Russia.....	105,212	332,200
Straits Settlements.....	42,746	119,933
Italy.....	1,772	
India.....	1,050	1,530
Canada and Newfoundland.....		392,495

Totals..... 34,120,895 43,264,723

(Same period 1913, 24,579,664 pounds; same period, 1912, 13,167,917.)

The export figures of rubber given in the above table for 1914 include the imports re-exported. (These amount to 3,581,356 pounds.) To arrive at the total quantity of Ceylon rubber exported for that period deduct these imports from the total exports. The figures for 1915 are for Ceylon rubber only.

SINGAPORE.

Guthrie & Co., Ltd., report [December 9, 1915]: For this week's auction 310 tons were catalogued, and unfortunately it was again found impossible to complete the sale in one day.

On Wednesday morning there was a good demand which was maintained until the lunch interval, but in the afternoon proceedings dragged to some extent. Today the market was much quieter and prices generally marked a material decline from yesterday's levels.

Ribbed smoked sheet averaged about \$187 per picul, an advance of \$24 on the week. For one lot \$200 was paid, but this was of course a purely artificial price. Fine pale crepe was in strong demand at about \$187 per picul, all lots readily finding buyers. The lower grades also moved off freely at substantially increased figures.

Of the quantity catalogued 262 tons were sold.

The following was the course of values:

	In Singapore Picul.	Sterling equivalent per pound in London.	Equivalent per pound in cents.
Sheet, fine ribbed smoked...	\$179@200	3/ 4¼ @ 3/ 9	82.35@91.22
Sheet, fair to good ribbed smoked.....	166@179	3/ 1¼ @ 3/ 4¼	76.77@82.35
Sheet, plain smoked.....	161@184	3/ 0¼ @ 3/ 5¼	74.50@84.37
Sheet, ribbed unsmoked.....	150@160	2/ 10¼ @ 3/ 0¼	69.93@74.24
Sheet, plain, unsmoked.....	147@159	2/ 10¼ @ 3/ 0¼	69.17@73.99
Crepe, fine pale.....	174@189	3/ 3¼ @ 3/ 6¼	80.07@86.40
Crepe, good pale.....	170@173	3/ 2¼ @ 3/ 3¼	78.55@79.56
Crepe, fine brown.....	154@170	2/ 11¼ @ 3/ 2¼	71.71@78.55
Crepe, good brown.....	140@154	2/ 8¼ @ 2/ 11¼	65.62@71.71
Crepe, dark.....	133@147	2/ 6¼ @ 2/ 10¼	62.58@69.17
Crepe, bark.....	108@135	2/ 1¼ @ 2/ 7¼	51.95@63.60
Scrap, virgin.....	95@135	1/ 11 @ 2/ 1	46.62@50.68
Scrap, pressed.....	116@117	2/ 3¼ @ 2/ 3¼	55.49@56.00
Scrap, loose.....	81@108	1/ 8 @ 2/ 1¼	40.54@51.95

Picul = 133 1/3 pounds.

Quoted in S. S. dollars = 2/4 [56 cents].

CRUDE RUBBER ARRIVALS AT THE PORT OF NEW YORK.

IMPORTS FROM PARA AT NEW YORK.

[The Figures Indicate Weights in Pounds.]

DECEMBER 30.—By the steamer *Denis* from Pará and Manãos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Meyer & Brown.....	216,500	10,000	176,600	46,200	449,300
Arnold & Zeiss.....	370,600	36,800	165,400	58,000	630,800
Henderson & Korn.....	241,300	40,500	61,400	23,500	366,700
Paul Bertuch.....	266,300	8,500	37,500	41,900	354,200
General Rubber Co.....	237,100	31,600	28,300	13,100	310,100
H. A. Astlett & Co.....	103,300	12,100	69,700	12,800	197,900
Aldens' Successors, Ltd.....	29,028	56,914	69,337	194	155,473
Robinson & Co.....	78,500	11,600	41,100	12,600	143,800
W. R. Grace & Co.....	74,700	4,800	6,900	12,800	99,200
Adolph Hirsch & Co.....	44,400	3,400	5,100	7,900	60,800
F. B. Ross & Co.....	6,600	1,800	7,700	1,500	17,600
J. T. Johnstone & Co.....	6,400	700	8,000	.....	15,100
Cowdrey & Co.....	2,900	700	5,400	.....	9,000
Muller, Schall & Co.....	4,900	.....	.....	3,100	8,000
Hagemeyer & Brunn.....	.....	.....	2,100	.....	2,100
G. Amsinck & Co.....	82,900	6,400	31,200	2,500	123,000

Totals1,765,428 225,814 715,737 236,094=2,943,073

JANUARY 7.—By the steamer *Rio de Janeiro* from Pará and Manãos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Meyer & Brown.....	88,300	12,000	127,300	33,800	261,400
G. Amsinck & Co.....	148,400	12,700	22,000	20,000	203,100
Arnold & Zeiss.....	92,700	17,000	65,100	13,700	188,500
H. A. Astlett & Co.....	45,300	8,800	111,500	1,300	166,900
Aldens' Successors, Ltd.....	21,197	20,271	29,835	1,634	72,937
Neuss, Hesselein & Co.....	35,000	.....	.....	.....	35,000
Henderson & Korn.....	10,400	3,300	13,600	.....	27,300
Paul Bertuch.....	10,700	1,100	13,200	.....	25,000
W. R. Grace & Co.....	10,600	.....	200	6,200	17,000
F. B. Ross & Co.....	2,500	.....	1,000	.....	3,500

Totals465,097 75,171 383,735 76,634=1,000,637

JANUARY 8.—By the steamer *Atahualpa* from Pará and Manãos:

Meyer & Brown.....	15,100	9,100	14,600	2,500	41,300
Arnold & Zeiss.....	22,100	1,000	25,100	64,700	112,900
G. Amsinck & Co.....	35,300	6,400	6,000	1,300	49,000
Aldens' Successors, Ltd.....	24,240	8,869	5,758	10,758	49,625
Robinson & Co.....	31,600	.....	14,300	.....	45,900
Pell & Dumont.....	33,600	4,700	2,700	3,200	44,200
Henderson & Korn.....	16,500	3,600	15,400	.....	35,500
W. R. Grace & Co.....	8,200	700	2,000	.....	10,900
Hagemeyer & Brunn.....	.....	.....	7,500	.....	7,500

Totals186,640 34,369 93,358 82,458=396,825

PARA RUBBER VIA EUROPE.

	POUNDS.
DECEMBER 24.—By the <i>Hanseatic</i> =Montevideo:	
A. D. Straus & Co.....	20,000
DECEMBER 30.—By the <i>Allianca</i> =Colon:	
G. Amsinck & Co. (Caucho)...	10,500
W. R. Grace & Co. (Caucho)...	10,000
W. R. Grace & Co. (Coarse)...	4,000
JANUARY 4.—By the <i>Calamares</i> =Cristobal:	
G. Amsinck & Co. (Fine).....	8,500
G. Amsinck & Co. (Coarse).....	1,500
W. R. Grace & Co. (Fine).....	6,500
W. R. Grace & Co. (Coarse)...	1,000
JANUARY 10.—By the <i>Tenadores</i> =Cristobal:	
G. Amsinck & Co. (Caucho).....	30,000
JANUARY 14.—By the <i>Advance</i> =Colon:	
Mecke & Co. (Caucho).....	20,500
W. R. Grace & Co. (Fine).....	11,000
W. R. Grace & Co. (Coarse)...	7,000
W. R. Grace & Co. (Caucho)...	7,200
Eastmond & Co. (Fine).....	3,200
JANUARY 17.—By the <i>Lewis K. Thurlow</i> =Montevideo:	
W. R. Grace & Co. (Fine).....	5,000

AFRICANS.

DECEMBER 27.—By the <i>Lapland</i> =Liverpool:	
Henderson & Korn.....	22,500
DECEMBER 27.—By the <i>Radja</i> =Penang:	
Various.....	80,000
JANUARY 3.—By the <i>Baltic</i> =Liverpool:	
Henderson & Korn.....	7,000
JANUARY 3.—By the <i>Den of Airline</i> =London:	
Aldens' Successors, Ltd.....	4,500
JANUARY 4.—By the <i>Francisco</i> =Hull:	
J. T. Johnstone & Co.....	112,000
JANUARY 6.—By the <i>Lord Sefton</i> =Liverpool:	
Arnold & Zeiss.....	135,000
J. T. Johnstone & Co.....	45,000
Goodyear Tire & Rubber Co....	13,500
JANUARY 10.—By the <i>Adriatic</i> =Liverpool:	
Henderson & Korn.....	18,000
Various.....	7,000
JANUARY 12.—By the <i>Orduna</i> =Liverpool:	
Arnold & Zeiss.....	110,000
Rubber Trading Co.....	11,200
JANUARY 12.—By the <i>Philadelphia</i> =Liverpool:	
Fred Stern & Co.....	4,500
JANUARY 17.—By the <i>Roma</i> =Lisbon:	
S. R. Sequeira & Co.....	112,000

CENTRALS.

DECEMBER 27.—By the <i>Monterey</i> =Mexico:	
Lehmer & Disbrow.....	500
J. A. Medino.....	200

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

DECEMBER 27.—By the *Tivives*=Barrios:

A. Rosenthal & Sons.....	3,500
W. R. Grace & Co.....	1,000

DECEMBER 27.—By the *Pastores*=Port Limon:

Isaac Brandon & Bros.....	1,000
Kunhardt & Co.....	700
Commercial Bank Spanish America.....	300

DECEMBER 30.—By the *Allianca*=Colon:

G. Amsinck & Co.....	7,600
Pablo Calvet & Co.....	12,100
A. M. Capen's Sons.....	2,000
J. S. Sembrada & Co.....	1,400
Pottberg, Ebeling & Co.....	1,000
A. Angel & Co.....	200

DECEMBER 30.—By the *Zacapa*=Cartagena:

G. Amsinck & Co.....	6,000
Pottberg, Ebeling & Co.....	500

JANUARY 3.—By the *Mexico*=Mexico:

H. Marquardt & Co.....	3,500
Graham, Hinkley & Co.....	500
G. Amsinck & Co.....	500

JANUARY 4.—By the *Calamares*=Port Limon:

A. Held.....	2,500
Isaac Brandon & Bros.....	1,200
G. Amsinck & Co.....	1,000
Gontard & Co.....	1,000

JANUARY 6.—By the *Colon*=Colon:

G. Amsinck & Co.....	43,400
Otto Gerdau Co.....	15,500
Lawrence Johnson & Co.....	25,200
Pablo, Calvet & Co.....	18,500
W. R. Grace & Co.....	15,200
Andean Trading Co.....	12,200
Muller, Schall & Co.....	1,800
Fidanque Bros. & Sons.....	500

JANUARY 7.—By the *Canillo*=Cartagena:

Andean Trading Co.....	4,500
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JANUARY 10.—By the *Esperanza*=Mexico:

E. Steiger & Co.....	500
G. Amsinck & Co.....	200
General Export & Commission Co.....	200

JANUARY 10.—By the *Sixola*=Puerto Cortez:

Rosenthal & Sons.....	2,000
Eggers & Heinlein.....	1,000
Maxwell Riddle.....	1,000

JANUARY 10.—By the *Tenadores*=Port Limon:

G. Amsinck & Co.....	1,000
Isaac Brandon & Bros.....	1,500
Harburger & Stack.....	1,000

JANUARY 12.—By the *Anillos*=New Orleans:

G. Amsinck & Co.....	2,000
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JANUARY 14.—By the *Advance*=Colon:

G. Amsinck & Co.....	6,200
Lawrence Johnson & Co.....	14,200
Andean Trading Co.....	8,000
Isaac Brandon & Bros.....	2,500
Otto Gerdau Co.....	21,000

JANUARY 14.—By the *Camaguey*=Mexico:

Harburger & Stack.....	2,000
J. S. Sembrada & Co.....	1,000

Graham, Hinkley & Co.....

General Export & Commission Co.....	500
Co.....	200

JANUARY 14.—By the *Santa Maria*=Cartagena:

Andean Trading Co.....	2,500
G. Amsinck & Co.....	200

JANUARY 17.—By the *Morro Castle*=Mexico:

G. Amsinck & Co.....	2,000
Various.....	10,000

JANUARY 20.—By the *Panama*=Colon:

Piza, Nephews & Co.....	5,000
Andean Trading Co.....	4,000
Muller, Schall & Co.....	1,600

JANUARY 20.—By the *Ancon*=Colon:

G. Amsinck & Co.....	25,000
Pablo Calvet & Co.....	8,000
A. M. Capen's Sons.....	4,800
Mecke & Co.....	4,500
American Trading Co.....	3,500
H. Wolff & Co.....	3,200
J. S. Sembrada & Co.....	2,000
Harburger & Stack.....	1,400
R. G. Barthold & Co.....	600
Silva Busenius & Co.....	500

MANICOBIA AND CAUCHO.

JANUARY 8.—By the <i>Justin</i> =Ceara and Pernambuco:	
Various.....	233,000

JANUARY 8.—By the *Justin*=Pernambuco:

J. H. Rossbach Bros. & Co. (Mangabeira).....	53,000
Lawrence Johnson & Co. (Manicoba).....	3,000

DECEMBER 30.—By the *Purnas*=Bahia:

Adolph A. Hirsch & Co.....	1,500
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DECEMBER 30.—By the *Demis*=Pernambuco:

J. H. Rossbach Bros. & Co. (Manicoba).....	13,000
J. H. Rossbach Bros. & Co. (Caucho).....	2,200

JANUARY 17.—By the *Asiatic Prince*=Bahia:

J. H. Rossbach Bros. & Co.....	57,000
Adolph Hirsch & Co.....	12,000
Various.....	36,000

PLANTATION RUBBER.

DECEMBER 27.—By the <i>Radja</i> =Batavia:	
Meyer & Brown.....	34,000
Edward Maurer Co., Inc.....	145,000
J. T. Johnstone & Co.....	150,000
General Rubber Co.....	300,000
Goodyear Tire & Rubber Co....	90,000
Manhattan Rubber Manufacturing Co.....	45,000
G. Amsinck & Co.....	10,000
Rubber Trading Co.....	25,000
Various.....	215,000
Aldens' Successors, Ltd.....	27,164
L. Littlejohn & Co., Inc.....	142,950

1,184,114

EXPORTED TO—	Belting, Hose and Packing.	Footwear.		Tires.		Insulated Wire and Cable.	Other Mnf. of India Rubber.	Fountain Pens.	Chewing Gum.	Reclaimed Rubber.	Scrap Rubber.
		Boots.	Shoes.	Auto.	Other.						
NORTH AMERICA:											
Bermuda	\$90				\$188		\$335		\$197		
British Honduras				\$213	347		199		86		
Canada							66				
Central America—											
Costa Rica	541			691	413	\$14	823	\$145	382		\$8
Guatemala	525			344	100	2,371	764		253		
Honduras	22			377	277		7				
Nicaragua	239						987				
Panama	10,810		\$456	7,173	1,792	9,639	4,378	76	3,986	\$7	
Salvador	834			1,591	318	173	3,124				
Mexico	8,013		64	14,957	4,272	835	7,722	32	6		50
Newfoundland and Labrador	85	\$78	1,708			73	58		808		
West Indies—											
British—											
Barbados				196	519				1		
Jamaica	137			5,348	1,406	70	1,023	9	4		
Trinidad and Tobago	851			6,938	701	335	1,326	295			
Other British	90		71	838	363	220	240		2		
Cuba	20,686		583	78,681	17,890	18,019	32,594	310	399		
Danish				388	8	53			5		
Dutch	82			385	56	194	83		4		
French	13			88			79				
Haiti	132		24	363	11	283	40		9		6
Santo Domingo	168		48	2,301	575	81	1,304				
Totals, North America	\$43,318	\$78	\$2,964	\$123,926	\$29,236	\$32,359	\$55,152	\$867	\$6,142	\$7	\$64
SOUTH AMERICA:											
Argentina	\$11,570		\$249	\$54,860	\$3,607	\$16,405	\$13,614	\$241	\$10,157	\$697	
Bolivia	1,168					2,119	231				
Brazil	5,058	\$671	3,050	23,206	105	39,063	17,427	617	207		
Chile	20,988		116	4,679	1,748	16,916	6,198				
Colombia	1,144	9	67	2,324	555	2,804	1,857	975	305		
Ecuador	245		246	805	1,505	159	1,153		197		
Guiana—											
British	97		24	8	2		198				
Dutch				146	52						
Peru	4,838	377		134	55	4,312	1,872		37		
Uruguay	572			3,007	2,537	382	885		150		
Venezuela	1,272		31	11,551	1,288	182	2,293				
Totals, South America	\$46,952	\$1,057	\$3,783	\$100,720	\$11,454	\$82,342	\$43,856	\$1,833	\$11,053	\$697	
ASIA:											
Aden				\$217							
China	\$2,624	\$73		1,243		\$412	\$2,071				
East Indies—											
British—											
British India	831			10,536	\$1,530	2	2,097		\$24		
Straits Settlements	265			810			44				
Dutch	34			966	569		1,007				
Hongkong	350			37			566		5		
Japan							23			\$308	
Siam						730	52				
Totals, Asia	\$4,104	\$73		\$13,809	\$2,099	\$1,144	\$3,763		\$29	\$308	
OCEANIA:											
British—											
Australia and Tasmania	\$788	\$2,525	\$10,366	\$5,275		\$440	\$6,729	\$188	\$242		
New Zealand							290		533		
Philippine Islands	2,614			19,029	\$7,243	129	3,941	144			
Totals, Oceania	\$3,402	\$2,525	\$10,366	\$24,304	\$7,243	\$569	\$10,960	\$332	\$775		
AFRICA:											
British Africa—											
West				\$12,686	\$678						
South	\$26,736		\$815	65,533	30,653	\$361	\$9,460		\$365		
East				527							
Portuguese Africa	2,022						359		140		
Totals, Africa	\$28,758		\$815	\$78,446	\$31,331	\$361	\$9,819		\$505		

In addition to the above, the following were exported during the same period: Balata to Panama, \$4,267; vulcanized rubber to Portugal, \$125; elasticon and substitutes to Costa Rica, \$95; aeroplanes to England, \$155,472; other manufactures of india rubber to Iceland, \$106, and to French China, \$4, and india rubber to the following countries: France, \$1,505; Portugal, \$27,877; England, \$73,804; Canada, \$1,483; Costa Rica, \$788; Nicaragua, \$133; Panama, \$86; Mexico, \$4,995; Chile, \$5,087; Colombia, \$1,099; Peru, \$36,431; British India, \$287,144; Straits Settlements, \$179,003; Dutch East Indies, \$17,430.

YEARLY EXPORTS AND IMPORTS OF CRUDE AND MANUFACTURED RUBBER BY COUNTRIES.

EXPORTS—CRUDE AND SCRAP RUBBER.

	1913.		1914.	
	Pounds.	Value.	Pounds.	Value.
British India:				
Burma	678,160	\$539,290	518,336	\$531,170
Rangoon	492,710			423,780
Ceylon—To United States	5,089,167		4,572,219	
To all countries	226,491	19,877,587	306,724	18,563,935
Costa Rica	104,614	42,272	37,016	12,076
Dutch East Indies—To U. S.		117,455		709,570
Federated Malay States		32,168,129		31,270,045
Manchuria—To United States			21,988	1,763
Nicaragua	488,169	278,763	314,790	124,327
Straits Settlements		20,882,000		19,133,760

IMPORTS—CRUDE AND SCRAP RUBBER.

Ceylon	\$1,789,854	\$1,805,705
Ireland	18,300	10,954
Japan—From United States		99,712
From Netherlands	13,002	8,872
From all countries		1,719,018
Nicaragua	31,231	25,831
Corinto		

EXPORTS—RUBBER MANUFACTURES.

Ireland	714,900	\$797,137
Italy—		
To Great Britain, tires		1,059,570
Germany, tires		928,427

IMPORTS—RUBBER MANUFACTURES.

Dutch East Indies		\$45,475
From United States, tires	\$8,000	9,900
Gibraltar		24
Ireland	2,005,800	\$2,236,543
Japan		981,837
From United States		241,152
Manchuria		110,475

RUBBER STATISTICS FOR THE UNITED STATES.

IMPORTS OF RUBBER AND RUBBER MANUFACTURES.

ARTICLES.	October, 1915.		Ten Months Ending October, 1915.	
	Quantity.	Value.	Quantity.	Value.
Unmanufactured—				
Balata .....(free) pounds	196,536	\$79,138	1,777,204	\$675,226
Guayule gum	36,205	9,031	4,902,291	1,356,537
Gutta jelutong	1,621,601	76,407	17,380,693	825,276
Gutta percha	113,931	13,144	1,846,057	216,671
Total	1,968,273	\$177,720	25,906,245	\$3,073,710

India rubber (free) pounds—				
From France			220,032	\$100,742
Germany			6,987	843
Portugal	37,196	\$22,337	3,821,776	1,371,834
United Kingdom	4,521,713	2,510,075	74,241,516	39,917,835
Central Am. States and Brit. Honduras	91,978	36,504	1,063,920	474,305
Mexico	62,541	20,826	1,491,541	562,281
Brazil	3,483,557	1,300,599	41,656,700	17,465,601
Other South America	510,600	215,199	4,894,607	2,109,695
East Indies	8,772,243	4,758,919	45,481,900	23,949,578
Other countries	3,052	3,052	5,040,937	2,817,487
Total	17,503,280	\$8,866,207	177,919,916	\$88,770,201

Rubber scrap (free) pounds	1,204,147	\$83,090	10,011,318	\$696,254
Total unmanufactured..		\$9,127,017		\$92,540,165

Chicle ... (dutiable) pounds	849,910	\$288,377	6,950,560	\$2,286,788
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Manufactured—				
Gutta percha (dut.) pounds		\$869		\$8,957
India rubber		14,668		389,517
Total manufactured....		\$15,537		\$395,474
Substitutes—elasticon, etc. (dutiable) pounds		\$824		\$13,938

EXPORTS OF DOMESTIC MERCHANDISE.

Scrap and old rubber..pounds	344,894	\$32,391	2,525,737	\$290,349
Reclaimed rubber	364,891	48,867	5,123,552	689,352
Belting, hose and packing...		229,986		1,636,372
Rubber boots .....pairs	193,226	431,468	342,577	775,601
Rubber shoes	218,269	125,637	1,728,696	1,286,990
Fountain pens .....number	5,008	3,658	179,909	188,516
Automobile tires—				
To England		\$936,571		\$5,037,891
Canada		158,637		976,100
Mexico		29,907		108,811
Cuba		\$1,234		270,843
Australia		51,429		415,525
Philippines		46,919		243,405
Other countries		272,245		1,395,988
Total		\$1,546,942		\$8,448,563

All other tires.....		\$278,412		\$1,524,904
All other rubber manufactures		535,033		4,090,607

Total manufactures of india rubber		\$3,232,393		\$18,931,254
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EXPORTS OF FOREIGN MERCHANDISE.

Unmanufactured—				
Balatapounds	13,768	\$4,922	784,360	\$307,479
Guayule gum			47,391	16,701
Gutta jelutong			162	18
Gutta percha			49,178	10,297
India rubber	449,562	237,252	4,038,881	2,035,445
Rubber scrap or refuse....	2,462	296	5,945	669
Total unmanufactured..	465,792	\$242,470	4,925,917	\$2,370,609

Chiclepounds	4,796	\$1,451	453,530	\$150,653
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Manufactured—				
Gutta perchapounds		\$166		\$185
India rubber		1,422		8,314
Total manufactured....		\$1,588		\$8,499

Substitutes—elasticon, etc....				\$364
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Total manufactures of india rubber		\$3,232,393		\$18,931,254
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EXPORTS OF RUBBER GOODS TO NON-CONTIGUOUS TERRITORIES OF THE UNITED STATES.

To—				
Alaska:				
Belting, hose and packing..		\$6,121		\$107,302
Boots and shoes.....pairs	7,412	17,197	56,375	164,582
All other rubber mnf.....		4,089		23,368
Total		\$27,407		\$295,252

Hawaii:				
Belting, hose and packing..		\$5,330		\$59,590
Automobile tires		45,130		361,327
All other tires.....		5,770		45,634
All other rubber mnf.....		6,405		52,340
Total		\$62,635		\$518,891

Porto Rico:				
Belting, hose and packing..		\$3,944		\$27,048
Automobile tires		34,328		256,961
All other tires.....		756		25,046
All other rubber mnf.....		7,440		55,890
Total		\$46,468		\$364,945

Philippine Islands:

Belting, hose and packing..		\$3,388		\$44,004
Boots and shoes.....pairs	6,980	6,031	35,624	32,307
Tires		57,327		325,398
All other rubber mnf.....		20,744		117,555
Total		\$87,490		\$519,264

RUBBER STATISTICS FOR CANADA.

IMPORTS OF CRUDE AND MANUFACTURED RUBBER.

UNMANUFACTURED, FREE—	October, 1915.		Seven Months Ending October, 1915.	
	Pounds.	Value.	Pounds.	Value.
Rubber and gutta percha, crude caoutchouc or india rubber:				
From Great Britain.....	403,208	\$235,269	2,876,838	\$1,518,831
United States	336,232	168,592	2,324,332	1,161,874
Brit. Straits Settlements.			22,574	11,659
Other countries			169,898	79,492
Total	739,440	\$403,861	5,393,642	\$2,771,856
Rubber, recovered:				
From Great Britain			4,392	\$2,482
United States	322,505	\$41,331	2,720,807	342,926
Total	322,505	\$41,331	2,725,199	\$345,408
Hard rubber, in sheets and rods:				
From Great Britain	4	\$5	4	\$5
United States	13,601	1,232	50,050	5,671
Total	13,605	\$1,237	50,054	\$5,676
Rubber substitute:				
From Great Britain			10,820	\$1,166
United States	38,692	\$2,572	269,825	19,708
Total	38,692	\$2,572	280,645	\$20,874
Rubber, powdered, and rubber or gutta percha waste:				
From Great Britain			2,709	\$217
United States	144,155	\$5,295	713,504	46,725
Other countries	270	14	2,979	127
Total	144,425	\$5,309	719,192	\$47,069
Rubber thread, not covered:				
From United States	3,850	\$5,327	16,830	\$23,245
Balata, crude:				
From United States			1,644	\$991
Chicle, crude:				
From Great Britain			2,888	\$1,675
United States	5,868	\$3,080	179,559	70,532
British Honduras	170,044	64,607	787,008	289,622
Mexico	58,799	23,499	185,093	69,737
Total	234,711	\$91,186	1,154,548	\$431,566

MANUFACTURED, DUTIALE—	October, 1915.		Seven Months Ending October, 1915.	
	General Tariff	Preferential Tariff	General Tariff	Preferential Tariff
Value.	Value.	Value.	Value.	Value.
Waterproof clothing:				
From Great Britain	\$572	\$15,915	\$3,407	\$247,744
United States	4,941		70,581	
Other countries			21	
Total	\$5,513	\$15,915	\$74,009	\$247,744
Hose, lined with rubber:				
From Great Britain				\$389
United States	\$6,577		\$43,972	
Total	\$6,577		\$43,972	\$389
Mats and matting:				
From Great Britain				\$84
United States	\$110		\$894	
Total	\$110		\$894	\$84
Packing:				
From Great Britain				\$110
United States	\$3,474		30,131	
Total	\$3,474		\$30,241	\$972
Tires of rubber for all vehicles:				
From Great Britain		\$998	\$9,971	\$17,427
United States	\$142,229		810,897	
France	1,792		15,377	
Other countries			1,130	
Total	\$144,021	\$998	\$837,375	\$17,427
*Rubber cement and all manufactures of india rubber and gutta percha, N. O. P.:				
From Great Britain	\$73	\$8,915	\$1,685	\$102,502
United States	47,667		326,052	
Other countries	280		614	
Total	\$48,020	\$8,915	\$328,351	\$102,502

*In addition, the imports of rubber cement and all manufactures of india rubber and gutta percha amounted to \$28 from various countries during October; and \$196 from Great Britain, and \$1,305 from other countries for the seven months ending October, 1915, the values being at treaty rates.

MANUFACTURED, DUTIABLE—	October, 1915.		Seven Months Ending October, 1915.		MANUFACTURED—	1914.		Ten Months from Jan. 1 to Oct. 31, 1915.	
	General Tariff Value.	Prefer- ential Tariff Value.	General Tariff Value.	Prefer- ential Tariff Value.		Pounds.	Value.	Pounds.	Value.
Hard rubber, unfinished, in tubes, for manufacture of fountain pens:					India rubber and gutta percha threads:				
From United States	\$533	.....	\$2,524	.....	From Great Britain.....	19,800	.....	34,320	.....
Webbing, over one inch wide:					United States	32,120	.....	42,240	.....
From Great Britain	\$32	\$370	\$42	\$6,452	Other countries	14,080	.....	2,420	.....
United States	11,622	.....	78,451	.....	Total	66,000	\$115,800	78,980	\$124,716
Other countries .....	.....	.....	330	.....	India rubber and gutta percha —sheets:				
Total	\$11,654	\$370	\$78,823	\$6,452	Cut sheets	26,400	\$45,772	14,740	\$22,324
Boots and Shoes:					Elastic fabric:				
From Great Britain .....	.....	.....	.....	\$11,546	From Austria-Hungary ..	176,000	.....	15,180	.....
United States	\$11,778	.....	\$49,059	.....	France	71,820	.....	44,220	.....
Other countries .....	.....	.....	10	.....	Germany	457,380	.....	42,460	.....
Total	\$11,778	.....	\$49,069	\$11,546	Great Britain	117,920	.....	124,740	.....
Belting:					Other countries ..	118,580	.....	31,680	.....
From Great Britain .....	.....	.....	.....	\$1,041	Total	931,700	\$767,050	258,280	\$213,361
United States	\$7,618	.....	\$32,964	.....	For insulated wire.....	2,970	\$573	220	\$104
Total	\$7,618	.....	\$32,964	\$1,041	Hard rubber	56,700	10,943	23,100	14,186
EXPORTS OF DOMESTIC AND FOREIGN RUBBER GOODS.					India rubber in tubes:				
					Cut sheets	7,480	\$13,125	1,540	\$2,297
					Rubber fabric:				
					From Austria-Hungary ..	26,400	.....	880	.....
					Germany	202,620	.....	5,720	.....
					Other countries ..	36,500	.....	34,100	.....
					Total	265,520	\$97,839	40,700	\$17,495
					Other forms	56,980	\$22,494	3,520	\$1,698
					Rubber Belting	67,320	\$35,435	59,400	\$31,266
					Rubber coated fabric—pieces:				
					From Austria-Hungary ...	51,480	.....	.....	.....
					Great Britain	51,700	.....	29,480	.....
					Other countries	44,660	.....	2,640	.....
					Total	147,840	\$97,272	32,120	\$21,134
					Rubber boots and shoes—pairs:				
					From Austria-Hungary ...	3,084	.....	1,531	.....
					France	376	.....	126	.....
					Germany	5,792	.....	4,224	.....
					United States	23,488	.....	28,812	.....
					Other countries	3,459	.....	159	.....
					Total	36,199	\$27,947	34,852	\$26,906
					Waterproof apparel	3,300	\$6,370	2,640	\$4,864
					Tires:				
					From France	950,180	.....	309,980	.....
					Germany	1,296,680	.....	2,640	.....
					Great Britain	298,980	.....	199,540	.....
					Russia	177,980	.....	.....	.....
					Other countries	65,120	.....	53,680	.....
					Total	2,788,940	\$3,669,993	565,840	\$689,990
					Other rubber manufactures:				
					From Austria-Hungary ...	108,240	.....	13,640	.....
					France	26,400	.....	1,358,940	.....
					Germany	322,520	.....	63,140	.....
					Great Britain	193,380	.....	876,480	.....
					Other countries	38,060	.....	766,700	.....
					Total	687,600	\$361,876	3,078,900	\$1,350,518
					Total Imports		\$10,724,962	.....	\$8,098,376
					EXPORTS.				
					UNMANUFACTURED—				
					India rubber and gutta percha				
					—raw and reclaimed.....	595,980	\$133,323	590,040	\$102,466
					Rubber scrap	337,920	\$20,751	15,180	\$932
					MANUFACTURED—				
					India rubber and gutta percha				
					threads:				
					To Austria-Hungary	4,400	.....	.....	.....
					Germany	48,840	.....	5,720	.....
					Great Britain	660	.....	1,980	.....
					Russia	2,420	.....	4,620	.....
					Argentina	2,420	.....	50,820	.....
					Other countries	25,300	.....	.....	.....
					Total	84,040	\$147,452	63,140	\$99,704
					India rubber in sheets:				
					Cut sheets	120,120	\$209,482	18,160	\$41,669
					Rubber fabric	352,440	400,841	398,200	497,490
					For insulated wire.....	.....	.....	1,100	261
					Hard rubber	880	540	20,460	12,564
					India rubber in tubes:				
					Cut sheets	880	\$1,544	5,720	\$8,531
					Rubber fabric	34,980	12,889	73,480	31,586
					Other forms	55,880	22,060	58,960	2,845
					Rubber belting	11,060	\$6,137	5,720	\$3,011
					Rubber coated fabric—pieces..	20,240	\$13,317	11,940	\$50,489
					Rubber boots and shoes—pairs	.....	.....	50	\$39
					Waterproof apparel	5,720	\$11,040	440	\$811

RUBBER STATISTICS FOR ITALY.

IMPORTS.

UNMANUFACTURED—	1914.		Ten Months from Jan. 1 to Oct. 31, 1915.	
	Pounds.	Value.	Pounds.	Value.
India rubber and gutta percha —raw and reclaimed:				
From Straits Settlements...	853,160	.....	2,262,040	.....
African Fr. Colony...	64,240	.....	48,840	.....
Belgian Congo	179,740	.....	240,900	.....
Brazil	5,033,160	.....	4,001,580	.....
Other countries	588,500	.....	726,000	.....
Total	6,718,800	\$5,304,799	9,479,360	\$5,821,189
Rubber scrap	1,870,440	\$147,680	2,453,000	\$157,392

*For the month of October the total weight of rubber waste exported to the United States was 564,000 pounds, and for the seven months ending October, was 5,283,700 pounds.

†For the month of October the total weight of gum chicle exported to the United States was 177,035 pounds, and to other countries 4,632 pounds. For the seven months ending October 10,000 pounds was exported to Great Britain, 974,210 pounds to the United States, and 66,834 pounds to other countries.

UNMANUFACTURED—	1914.		Ten Months from Jan. 1 to Oct. 31, 1915.	
	Pounds.	Value.	Pounds.	Value.
Tires:				
To Austria-Hungary	1,195,700			
Belgium	54,780			
France	113,080		154,440	
Germany	700,040			
Great Britain	4,526,060		2,165,020	
Switzerland	396,000		115,600	
Australia	83,600		41,360	
Argentina	434,720		881,760	
Brazil	87,560		312,400	
Other countries	630,740		3,096,280	
Total	8,222,280	\$10,819,773	6,866,860	\$8,373,512
Other manufactures not speci- fied	2,159	\$375,018	2,125	\$291,189
Total Exports		\$9,493,855		\$12,138,916

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

DURING January the market has maintained the same features which characterized the business for December. The demand in all lines has been steady and prices have remained very firm. The advances in prices in all lines being retained without exception. There is an excess of demand over production in such lines as lithopone, zinc oxide, aniline oil and benzol. Lithopone and zinc oxide supplies, both domestic and foreign, are practically fully contracted for several months to come.

The following are spot prices current on the London market, January 8: Benzol, 90%, 25@26 cents; red lead, English, per ton, \$171; white lead, English, \$179 per ton; flowers of sulphur, \$58 per ton.

PRICES OF CHEMICALS AND COMPOUNDING INGREDIENTS. NEW YORK, JANUARY 29, 1916.

Subject to change without notice.

Acetone (drums)	lb.	\$0.35	@	\$0.40
Acid, acetic, 28 per cent. (bbis.)	lb.	.06	@	.07
glacial, 99% (carboys)	lb.	.30	@	.35
Aluminum Flake (carloads)	ton	18.00	@	20.00
Ammonium carbonate				None
Antimony, crimson, sulphuret of (casks)	lb.	.80	@	.85
golden, sulphuret of (casks)	lb.	.65	@	.70
Asbestine	ton	19.00	@	20.00
Asbestos	lb.	.04	@	.05
Asphaltum "G" Brilliant	lb.	.03	@	.03½
Barium sulphate, precipitated	ton	120.00	@	
Barytes, pure white	ton	21.00	@	23.50
off color	ton	20.00	@	21.00
Basofo	ton	105.00	@	120.00
Benzol, pure	gal.	.80	@	.90
Beta-Naphthol	lb.	1.50	@	3.00
Black Hypo	lb.	.39	@	.40
Bone ash	lb.	.10	@	
black	lb.	.02½	@	.05
Cadmium tri-sulphate				None
yellow				None
Canella gum	lb.	.27½	@	.35
Carbon, bisulphide (drums)	lb.	.07½	@	.08
black (cases)	lb.	.06	@	.15
tetrachloride (drums)	lb.	.18	@	.20
Caustic soda, 76 per cent. (bbis.)	cwt.	5.75	@	6.00
Chalk, precipitated, extra light	lb.	.05	@	
precipitated, heavy	lb.	.04	@	
China clay, domestic	ton	13.50	@	15.00
imported	ton	22.00	@	35.00
Chrome, green	lb.	.10	@	.12
yellow	lb.	.23	@	.28
Coal tar	gal.	.09	@	
Cotton linters	lb.	.07	@	.12
Emarex	ton	70.00	@	
Gas black	lb.	.07½	@	.08
Gilsonite	ton	37.50	@	42.50
Glycerine, C. P. (drums)	lb.	.53½	@	.56
Graphite, flake (250 to 400 pound bbl.)	lb.	.06	@	.14
powdered (250 to 400 pound bbl.)	lb.	.06	@	.14
Green oxide of chromium (casks)	lb.	.42	@	.50
Ground glass	lb.	.02½	@	
Indian red	lb.	.03½	@	.07
Infusorial earth, powdered	ton	50.00	@	
bolted	ton	60.00	@	
Iron oxide, red, reduced grades	lb.	.02½	@	.06
red, pure	lb.	.05½	@	.09

Ivory, black	lb.	.08	@	.12
Lampblack	lb.	.05½	@	.15
Lead, red oxide of	lb.	.07½	@	.08
sublimed blue	lb.	.06½	@	
white, basic carbonate	lb.	.07	@	.07½
white, basic sulphate	lb.	.06½	@	.07
Lime, flour	lb.	.01	@	.01½
Litharge	lb.	.07	@	.07½
English	lb.	None		
Lithopone, domestic	lb.	.10½	@	.13
Imported	lb.	.10½	@	.13
Magnesia, carbonate	lb.	.14	@	.15
calcined, heavy	lb.	.35	@	.40
light	lb.	.35	@	.40
Magnesite, calcined, powdered	ton	30.00	@	35.00
Mica, powdered	lb.	.03½	@	.05
Mineral rubber	lb.	.01½	@	.04½
Naphtha, stove gasoline (steel bbls.)	gal.	.21	@	.22
66@68 degrees	gal.	.25	@	.26
68@70 degrees	gal.	.26	@	.27
V. M. & P.	gal.	.21	@	
Oil, aniline	lb.	1.20	@	1.40
linseed (bbl.)	gal.	.74	@	.79
palm	gal.	.09½	@	.10½
pine (cases)	gal.	.55	@	
rapeseed	gal.	1.03	@	1.12
rosin, heavy body	gal.	.32	@	.36
tar (cases)	gal.	.30	@	.31
soluble aniline colors, yellow, orange, red, violet, blue, green	lb.	3.00	@	3.50
Orange mineral, domestic	lb.	.10	@	.10½
Paragol	lb.	.07½	@	
Petroleum grease	lb.	.04	@	
Pine tar, retort	gal.	.14	@	.16
Pitch, burgundy	lb.	.04½	@	.05½
pine	lb.	.02½	@	
Plaster of paris	lb.	1.50	@	1.70
Prussian blue	lb.	1.50	@	1.75
Pumice stone, powdered (bbis.)	lb.	.02	@	.03
Resin, Pontianak, refined	lb.	.12	@	.15
granulated	lb.	.12	@	.15
fused	lb.	.12	@	.15
Rosin (500 pound bbls.)	lb.	5.50	@	8.65
Rotten stone, powdered	lb.	.02½	@	.04
Rubber black	lb.	.03	@	
Rubber substitute, black	lb.	.07½	@	.08
white	lb.	.10	@	.13
Shellac, fine orange	lb.	.25	@	.28
Soapstone, powdered	ton	10.00	@	12.00
Starch, corn, powdered	lb.	.02½	@	.02½
Sulphur chloride (drums)	ton	.08½	@	.09
Sulphur, flowers	cwt.	2.20	@	2.60
Sulphuric acid, 66°	lb.	.02	@	.02½
Talc, American	ton	8.50	@	13.00
French	ton	25.00	@	30.00
Toluol, pure	gal.	4.75	@	5.00
Tripolite earth, powdered	ton	50.00	@	
bolted	ton	60.00	@	
Turpentine, pure gum spirits	gal.	.58	@	
wood	gal.	.54	@	
Ultramarine, blue	lb.	.05	@	.22
Vermilion, brilliant	lb.	.90	@	1.00
Chinese	lb.	2.35	@	2.50
English	lb.	3.00	@	
Wax, bayberry	lb.	.22	@	.24
beeswax, white	lb.	.47	@	.55
ceresin, white	lb.	.14	@	.16
carnauba	lb.	.22	@	.47
ozokerite, black	lb.	.40	@	
green	lb.	.60	@	.75
montan	lb.	.28	@	.30
paraffin, refined, 118/120 m. p. (cases)	lb.	.04½	@	
123/125 m. p. (cases)	lb.	.04½	@	
128/130 m. p. (cases)	lb.	.05½	@	
133/136 m. p. (cases)	lb.	.06½	@	.06½
crude, white, 117/119 m. p. (bbis.)	lb.	.03½	@	
yellow, 124/126 m. p. (bbis.)	lb.	.03½	@	
Whiting, Alba, factory	f. o. b. factory ton	7.00	@	8.50
commercial	" " cwt.	.55	@	.65
gilders	" " cwt.	.65	@	.75
Paris white, American	" " cwt.	.85	@	.95
English cliffstone	" " cwt.	.90	@	1.25
Wood pulp, XXX	ton	30.00	@	
Yellow ochre	lb.	.02	@	.02½
Zinc oxide, American process, horsehead brand "special"	f. o. b. factory lb.	.09½	@	.09½
"XX red"	" " lb.	.08½	@	.08½
French process, green seal	" " lb.	.16½	@	.16½
red seal	" " lb.	.17	@	.16½
white seal	" " lb.	.17	@	.17½
Zinc oxide, imported, white seal	lb.	.28	@	
Zinc sulphide, pure	lb.	.07½	@	.14

MARKET FOR COTTON AND OTHER FABRICS.

EGYPTIAN COTTON.

LATE in the month the cables announced the indefinite closing of the cotton exchange at Alexandria, Egypt, due to the highly speculative character of the market that had become demoralized by the difficulties encountered in shipping.

COTTON DUCK.

The mechanical duck situation has not materially changed during January and the market activity, particularly in the heavy grades that prevailed during the past month, continues at present. The mills are all running at full capacity and the question of delivery rather than price is the principal factor in writing contracts.

Hose and belting duck have advanced; the former selling at 26-27 cents and the latter at 25-26 cents. The mechanical goods trade has been improving steadily and several large buyers have been written up for delivery, covering the greater part of 1916.

DRILLS AND OSNABURGS.

The demand continues to be heavy and severely taxes the efforts at the mills to meet the situation with increased production. The calls for wide drills, particularly the 52 and 60-inch, are insistent and deliveries are now being written for July. Prices have undergone an upward change of one-quarter to one-half cent the yard, in the entire list and are firm at the quoted figures.

There are no stocks of osnaburgs in sight and prices have advanced a half cent and one cent the yard on certain grades. Deliveries can not be made before May.

TIRE FABRICS.

The shutting off of the supply of Egyptian cotton has strengthened the position of Sea Island fabrics and still higher prices are frankly predicted. Sea Island building fabric has advanced 6 cents and Egyptian combed shows a gain of 5 cents during the past month. Inquiries from recently formed firms indicate that the number of new tire plants is steadily increasing, giving added support to the fabric manufacturers' estimate of 15,000,000 tires as the production for 1916.

YARN DYED GOODS.

The general condition has undergone little change during the past month with the exception of prices which are still advancing. All former quotations have been withdrawn and new business is done at prices ruling on the day the orders were taken. Until the present time it has never been necessary on the part of the mills to accept orders conditional on the supply of materials. But now all orders are taken subject to the condition that the mills will be able to procure the necessary dye stuffs to complete the contract.

The following are New York quotations on January 29, 1916:

Aeroplane and Balloon Fabrics:			
Wamsutta, S. A. L. No. 1, 40-inch.....	yard	\$0.22	@
O/X B. No. 4, 38½.....		.22	@
O/X B. No. 36-inch.....		.11½	@
Wool Stockinettes—52 inch:			
A—14-ounce.....	yard	1.12½	@
B—14-ounce.....		1.25	@
C—14-ounce.....		1.50	@
Cotton Stockinettes—52-inch:			
D—14-ounce.....	yard	.49	@ .30
E—11½-ounce.....		.39	@ .40
F—14-ounce.....		.53	@ .54
G—8-ounce.....		.43	@ .44
H—11-ounce.....		.48	@ .49
I—9-ounce.....		.40½	@ .41½

Colors—white, black, blue, brown.

12½-ounce Sea Island, combed.....square yard .75 @ .78

17½-ounce Egyptian, combed.....	.63	@	.65
17½-ounce Egyptian, carded.....	.55	@	.58
17½-ounce Peclers, carded.....	.43	@	.45
Sheeting:			
40-inch 2.35-yard.....	yard	.10½	@ .10¾
40-inch 2.50-yard.....		.09	@ .09½
40-inch 2.70-yard.....		.08	@ .08½
40-inch 2.85-yard.....		.07¾	@ .08½
40-inch 3.15-yard.....		.08	@ .08½
Osnaburgs:			
40-inch 2.25-yard.....	yard	.11½	@
40-inch 2.48-yard.....		.10½	@
37½-inch 2.42-yard.....		.10½	@
Mechanical Ducks:			
Hose.....	pound	.26	@ .27
Belting.....		.25	@ .26
Carriage Cloth Duck:			
38-inch 2.00-yard enameling duck.....	yard	.13½	@ .14
38-inch 1.74-yard.....		.14½	@ .15
72-inch 16.66-ounce.....		.28	@ .29
72-inch 17.21-ounce.....		.29	@ .30
Drills:			
38-inch 2.00-yard.....	yard	.12½	@ .13
40-inch 2.47-yard.....		.10	@ .10½
52-inch 1.90-yard.....		.13¾	@ .15¾
52-inch 1.95-yard.....		.12½	@ .15
60-inch 1.52-yard.....		.16½	@ .20¾
Yarns:			
Garden Hose 12/2 cabled.....	pound	.21	@ .21½
Fire Hose 12/1.....		.24	@ .24½
Imported Woolen Fabrics Specially Prepared for Rubberizing.			
Plain and Fancies:			
63-inch, 3¼ to 7½ ounces per square yard.....	yard	.38	@ 1.55
36-inch, 2¼ to 5 ounces per square yard.....		.35	@ .85
Plaid Lining:			
63-inch, 2 to 4 ounces per square yard.....	yard	.35	@ .75
36-inch, 2 to 4 ounces per square yard.....		.20	@ .45
Domestic Worsted Fabrics:			
36-inch, 4½ to 8 ounces per square yard.....	yard	.20	@ .35
Raincoat Cloth:			
Bombazine.....	yard	.06	@ .07½
Twills.....		.10	@ .12½
Tweed.....		.10	@ .30
Tweed, printed.....		.06	@ .11
Plaid.....		.06	@ .08
Repp.....		.18½	@ .22
Burlaps:			
32—7½-ounce.....	100 yards	6.60	@
40—7½-ounce.....		7.15	@
40—8-ounce.....		7.25	@
40—10-ounce.....		11.25	@
40—10½-ounce.....		11.50	@
45—7½-ounce.....		8.35	@
45—8-ounce.....		8.50	@
48—10-ounce.....		12.50	@

CANADIAN IMPORTS OF COTTON FABRIC.

ARTICLES, DUTYABLE—	October, 1915.		Seven Months Ending October, 1915.	
	General Tariff Value.	Preferential Tariff Value.	General Tariff Value.	Preferential Tariff Value.
Stockinettes for the manufacture of boots and shoes:				
From Great Britain.....		\$295		\$1,217
United States.....	\$11,241		\$44,318	
Total.....	\$11,241	\$295	\$44,318	\$1,217
Cotton duck, gray or white, N. O. P.:				
From Great Britain.....	\$1,528	\$5,438	\$2,828	\$21,113
United States.....	48,821		198,205	
Other countries.....	83		94	
Total.....	\$50,432	\$5,438	\$201,127	\$21,113
ARTICLES, FREE.—Cotton or linen seamless duck, in circular form for use in hose pipe, was imported from United States only, and amounted to \$2,837 for October, making a total of \$25,598 for the seven months ending October, 1915.				



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BENZOL PRODUCTION.

Before the European war the demand in the United States for benzol and toluol products was so small and the price so low that but one company sought to recover them on a large scale. Late in 1914 the price of benzol, and particularly toluol, rose to such a point that many other companies began to build plants to recover these oils, and by the end of 1915 there were 19 new plants for benzol recovery in operation and others in course of erection.

Reports indicate that the output of benzol and other light oils in 1915 amounted to 13,942,763 gallons. In the 6,620,093 gallons of oils refined at the place of recovery, there were 4,833,939 gallons of 100 per cent benzol, 1,315,727 gallons of toluol, and 470,425 gallons of solvent naphtha.

The annual capacity of the benzol recovery plants now in operation is estimated at over 20,000,000 gallons, and with the completion of plants now building will probably exceed 22,000,000 gallons. The value of these products is indicated by the price currently reported during the year. Benzol, normally selling for 20 cents or less a gallon, in September brought as high as \$1.25 for immediate shipment and 65 cents on contract; toluol, with a normal price of 25 cents, was sold for as much as \$6 a gallon for immediate delivery and was contracted for at \$4.25 per gallon.

